FINAL
HEALTH AND SAFETY PLAN
EASTERN PLUME — OPERABLE UNIT 1

NEW CASSEL/HICKSVILLE
GROUNDWATER CONTAMINATION SUPERFUND SITE
NASSAU COUNTY, NEW YORK

U.S. EPA Site No. NY0001095363
Revision: 0

EnSafe Project Number:
0888820265

Prepared for:

101 Frost Street Associates, L.P. and Next Millennium Realty, LLC

April 2022

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Wethersfield, Connecticut 06109
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EMERGENCY RESPONSE SUMMARY

Staging Area Address: 89/101 Frost Street, Westbury, New York
Site Address: Drainage Basin 51 and Choir, Cameo, and Crystal Lanes, Salisbury, New York
Site Telephone Number (business hours): To be determined

Emergency Contacts IN CASE OF EMERGENCY DIAL 911		
Event	**Contact**	**Phone**
Medical emergency	Emergency	911
Domestic disturbance or security incident	Nassau County Police Department	516-573-6300
Fire	Westbury Fire Department	516-334-7968
Damage to underground utility	*Utilities in the work areas will be added to this list once work areas are determined.*	
Threatened release of a hazardous contaminant offsite	EnSafe Project Manager	860-920-5172
Release of a hazardous contaminant offsite	NYSDEC SPILLS U.S. EPA Officer Thomas Mongelli U.S. EPA Officer (Alternate) Pietro Mannino U.S. EPA Officer (Alternate) Joseph Rotola	800-457-7362 212-637-4256 212-637-4287 732-321-6658
Petroleum spill to waterway or drain		
Hazardous substance spill exceeding reportable quantity	National Response Center	800-424-8802

Nearest Emergency Response Organizations

- **Hospital:**
  Nassau University Medical Center
  516-572-3311

- **Police Station:**
  Nassau County Police Department
  516-573-6300

- **Fire Station:**
  Westbury Fire Department
  516-334-7968

Primary Shelter-in-Place Location Onsite

Staging area at 89/101 Frost Street, Westbury, New York

First Response Steps

In the event of a **release of a hazardous contaminant offsite**, do the following:

1. Call the Project Manager (or EnSafe Inc. office) and U.S. EPA Officer

2. Close off the storm water outfall for surface water releases

3. Perform defensive actions to limit the spread of the contaminant

4. For any spill of petroleum leaving the property and entering a drainage canal or storm drain, immediately notify NYSDEC SPILLS at 800-457-7362.

5. For any spill or determined to exceed the Reportable Quantity of a hazardous substance, immediately notify the National Response Center at 800-424-8802. The Site Health and Safety Officer shall also prepare a description of the event as required by the National Response Center.

In the event of a **threatened release of a hazardous contaminant offsite**, do the following:

1. Call the EnSafe Project Manager or EnSafe office.

2. Monitor the situation until EnSafe arrives

3. If a release occurs, perform defense actions to limit the spread of the contaminant

In the event of a **medical emergency**:

1. Call 911 to report the medical emergency.

2. Depending on the nature of the medical emergency, follow the instructions of the 911 dispatcher.

3. Monitor the condition of the victim until emergency medical services arrive.

GENERAL HEALTH AND SAFETY POLICY STATEMENT

101 Frost Street Associates, L.P. and Next Millennium Realty, LLC, EnSafe Inc., and their subcontractors, are committed to providing a safe and healthful project site and working environment. Environmental Health and Safety (EHS) performance will not be compromised for the sake of other objectives. We will achieve this by promoting an "EHS Culture" in which health and safety are paramount in each endeavor. We will actively promote and maintain the following beliefs in everything we do.

Concern for the health and safety of our employees, contractors, and other stakeholders will be evident and embedded into all phases of our work by design and through the business decisions we make. Each employee is empowered with responsibility for his or her health and safety and the health and safety of their fellow employees and stakeholders.

Continuous improvement is also a goal; we use feedback and experience to refine and build upon our EHS Culture to ensure continual forward progress. EHS incidents are preventable; we will strive to ensure that our policies, practices, and decisions are proactive on all accounts. Project management is responsible for ensuring that all stakeholders have the knowledge, skills, and equipment necessary to protect themselves and others.

We will not be satisfied to simply meet compliance standards. Every task must be performed with concern for the welfare of employees, contractors, visitors, and the communities in which we operate.

Protecting the well-being of all involved in our projects is a way of life around the clock — both on and off the job. We ask that everyone understand the EHS issues and responsibilities associated with their work and adhere to our established policies and programs. The success of our program depends on incorporating our EHS Culture into every part of our day-to-day project practice and decisions.

Stop Work Authority

We seek to prevent personal harm, property damage, or adverse effects to the environment. Any person, regardless of position, seniority, or discipline, has the right and duty to apply the STOP WORK policy if, in his/her opinion or judgment, such activity is deemed to be a potential incident. STOP WORK shall be applied if any situation arises due to an unsafe action, behavior, or non-action of any party involved in the operation, and if such situation were permitted to continue, may potentially lead to the occurrence of a mishap.

There shall be no blame or fault put on any employees' call for a STOP WORK order even if, upon investigation, the STOP WORK was deemed unnecessary. The STOP WORK order must be applied in good faith.

HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT FORM

INSTRUCTIONS: This form is to be completed by each person working on the project site and returned to the project file. By signing below, you acknowledge that you have read and understand the contents of this plan and agree to perform work in accordance with it.

SIGNATURE	PRINT NAME	COMPANY	DATE

REVISION RECORD

Revisions to this document will be recorded below. Changes must be communicated and acknowledged by affected personnel.

Date	Revision Number	Revision Description	Authorized by
3/22/2021	0	Initial release of draft document	101 Frost Street Associates, L.P. and Next Millennium Realty, LLC
10/21/2021	0	Final document	101 Frost Street Associates, L.P. and Next Millennium Realty, LLC and United States Environmental Protection Agency

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APPENDICES

ACRONYMS

ACGIH TLV	American Conference of Industrial Hygienists Threshold Limit Value
ATSDR	Agency for Toxic Substances and Disease Registry
FSP	Field Sampling Plan
HASP	Health and Safety Plan
NIOSH REL	National Institute for Occupational Safety and Health Recommended Exposure Limit
NCIA	New Cassel Industrial Area
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCE	tetrachloroethene
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer
PID	photoionization detector
PPE	personal protection equipment
ppm	parts per million
ROD	Record of Decision
SPCC	Spill Prevention, Control, and Countermeasures
SHSO	Site Health and Safety Officer
SWAP	Safe Work and Assessment Permit
TCE	trichloroethene
µg/L	micrograms per liter
U.S. EPA	United States Environmental Protection Agency
VOC	volatile organic compounds

1.0 INTRODUCTION

EnSafe Inc. has prepared this Health and Safety Plan (HASP) for the Pre-Design Investigation for the Eastern Plume of Operable Unit (OU) 1 of the New Cassel/Hicksville Groundwater Contamination Superfund Site (Site), located in Nassau County, New York. The remedy for OU1 was selected in the OU1 Record of Decision (ROD) issued by the United States Environmental Protection Agency (U.S. EPA) on September 30, 2013. It should be noted that work at the Site will be performed in different work areas throughout OU1, and this work may be performed simultaneously with that for the Central Plume. This HASP is intended to address health and safety requirements for Eastern Plume work only.

1.1 Site Description and Background

The Site comprises a widespread area of groundwater contamination within the Town of North Hempstead, Town of Hempstead, and the Town of Oyster Bay, all of which are located in Nassau County, New York (Figure 1). The Site is approximately 6.5 square miles. The Site was listed on the National Priorities List in 2011.

The Site's OU1 is a discrete portion of contaminated groundwater downgradient of the New Cassel Industrial Area (NCIA) located within the Towns of North Hempstead and Hempstead. OU1 is located primarily in Salisbury, an unincorporated area of the Town of Hempstead, and the portion of OU1 north of Grand Boulevard is located within the Hamlet of New Cassel, in the Town of North Hempstead (Figure 2). OU1 is approximately 211 acres and consists of residential properties, as well as some commercial areas.

Upgradient of OU1 is the NCIA, which is currently being managed by the New York State Department of Environmental Conservation (NYSDEC). The NCIA encompasses approximately 170 acres and is bounded by the Long Island Railroad to the north, Frost Street to the east, Old Country Road to the south, and Grand Boulevard to the southwest.

The Town of Hempstead's Bowling Green Water District operates Wells 1 and 2 on property that is located within OU1 (labeled as Hempstead-Bowling Green Wells 1 and 2, on Figure 2). The Bowling Green Water District has been treating groundwater pumped from these two wells since 1990, when a granular activated carbon system was installed. Five years later, the treatment system was supplemented with an air stripper. The treatment system is still in operation. The Town of Hempstead continues to maintain monitoring and treatment activities to address volatile organic compound (VOC) contamination prior to its distribution to the drinking water system.

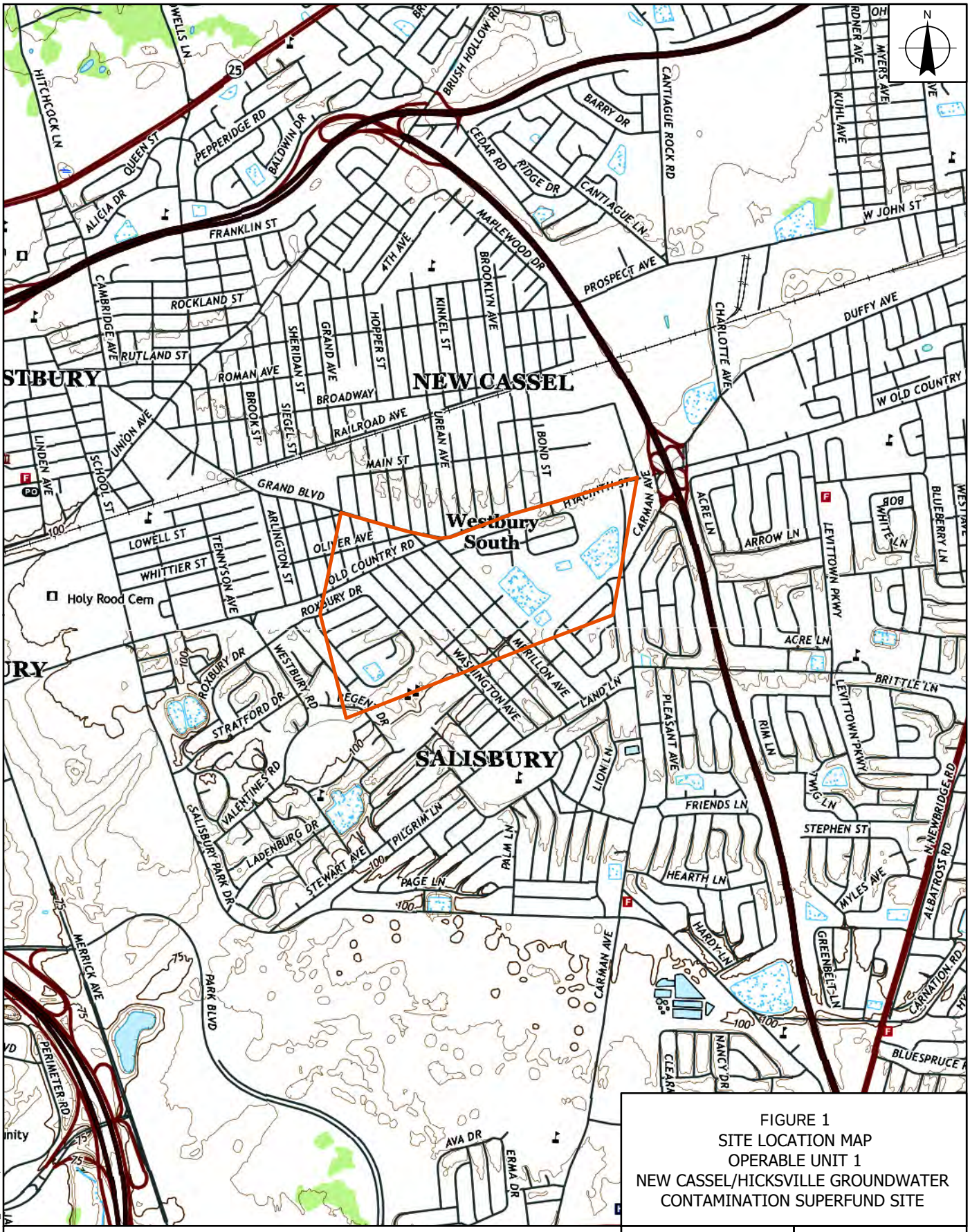

FIGURE 1
SITE LOCATION MAP
OPERABLE UNIT 1
NEW CASSEL/HICKSVILLE GROUNDWATER
CONTAMINATION SUPERFUND SITE

LEGEND

OPERABLE UNIT 1 OF NEW CASSEL/HICKSVILLE GROUNDWATER CONTAMINATION SUPERFUND SITE

NAD 1983 STATE PLANE
NEW YORK ISLAND FEET

0 1,000 2,000

SCALE IN FEET

REQUESTED BY:	AS
DRAWN BY:	MS
DATE:	3/11/2021
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Source: U.S. Geological Survey. Freeport & Hicksville Quadrangles, New York [Map]. Photorevised 2019. 1:24,000. 7.5 Minute Series.

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FIGURE 2
SITE MAP
OPERABLE UNIT 1
NEW CASSEL/HICKSVILLE GROUNDWATER
CONTAMINATION SUPERFUND SITE

LEGEND

- HEMPSTEAD-BOWLING GREEN WELLS 1 AND 2
- OPERABLE UNIT 1 OF NEW CASSEL/HICKSVILLE GROUNDWATER CONTAMINATION SUPERFUND SITE

NAD 1983 STATE PLANE
NEW YORK ISLAND FEET

0 350 700

SCALE IN FEET

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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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1.2 Nature of Groundwater Contamination

The Site has been characterized by VOC contaminated groundwater that has impacted several water supply wells, including four Town of Hempstead municipal wells, six Hicksville water supply wells, and one Village of Westbury water supply well. Analytical results of groundwater samples from the Site have revealed concentrations of VOCs in excess of the U.S. EPA's promulgated health-based protective maximum contaminant levels and New York State's standards.

The term plume defines an area of groundwater contamination with concentrations of total VOCs greater than 100 micrograms per liter (µg/L). OU1 has three plumes, the Western Plume, the Central Plume, and the Eastern Plume, each with different source areas and contamination chemical compositions.

At the time of data collection for the OU1 ROD (2011), the Eastern Plume, subject of this HASP, was comprised predominantly of tetrachloroethene up to 16,000 µg/L with some trichloroethene and concentrations less than 23 µg/L of 1,1,1-trichloroethane. Contamination appears to migrate deeper as the distance along the plume axis increases away from the NCIA. Subsequent groundwater sampling events indicate the Eastern Plume groundwater concentrations have decreased.

2.0 PURPOSE

This HASP serves as the guiding health and safety document for implementation of the Pre-Design Investigation at the OU1 Eastern Plume. All Site personnel, contractors, subcontractors, and supporting staff, will be provided an opportunity to review this HASP and may incorporate its provisions into their health and safety plans for the Site. However, this HASP will be the overriding instruction for Site-wide activities under the control of the project coordinator. Health and safety plans prepared for specific activities by contractors and subcontractors should coordinate with this HASP.

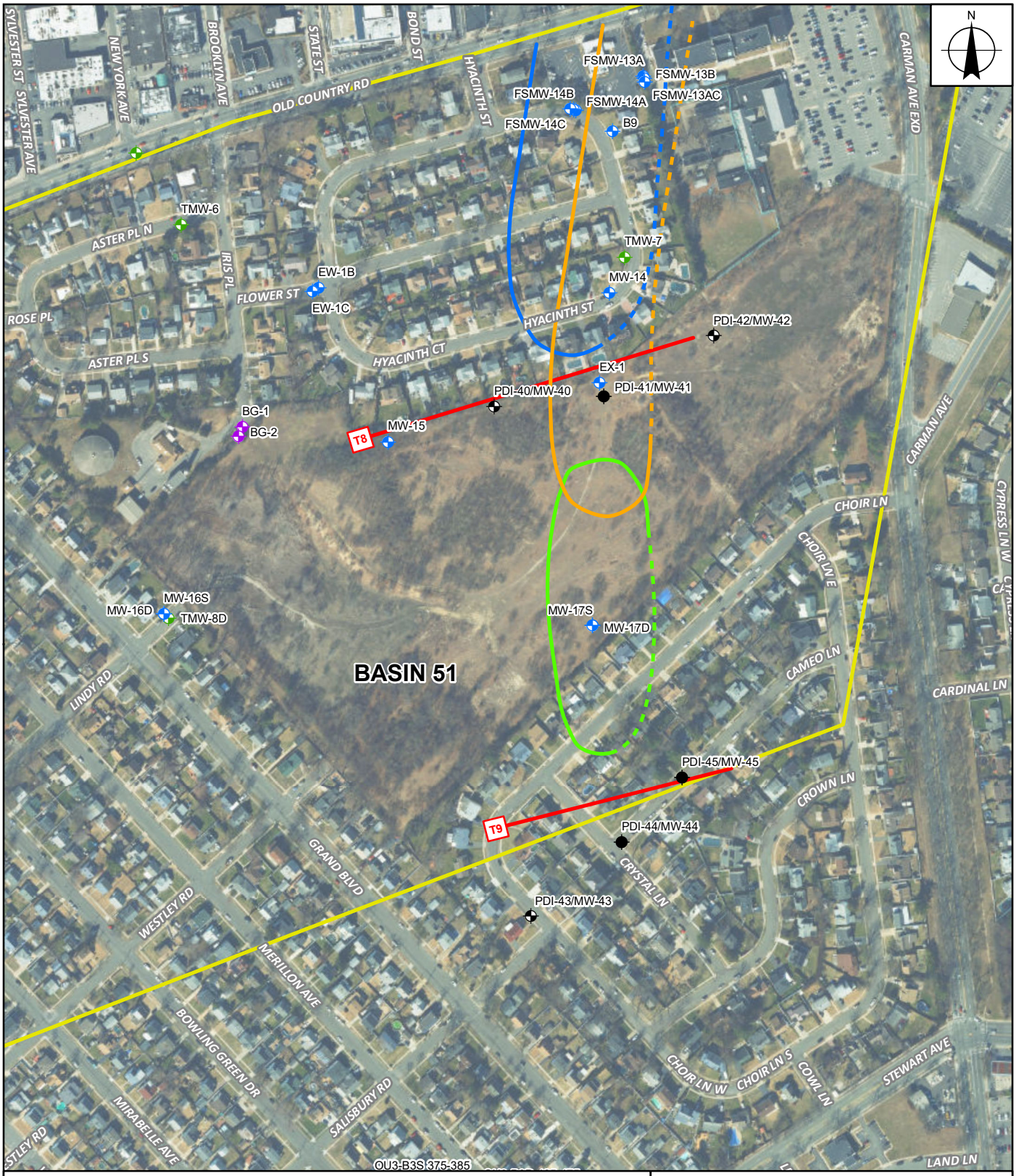
Additional documents have been prepared for the Eastern Plume under separate cover that are intended to accompany this HASP:

- Field Sampling Plan (FSP): Describes procedures for collection of field samples and related field activities.

- Quality Assurance Project Plan: Describes quality assurance/quality control measures, sample analysis and data handling requirements, chain of custody procedures, and project data objectives.

- Site Management Plan: Includes the Institutional Control Implementation Assurance Plan, Transportation and Offsite Disposal Plan, Quality of Life Plan, and the Monitoring Plan for operation and maintenance of the Site remedy.

Work at the Site consists of the installation of vertical profile borings and related monitoring wells, groundwater sampling, and associated field tasks as described in the Eastern Plume FSP (EnSafe, April 2022) and shown on Figure 3.



LEGEND

- PROPOSED PROFILE BORING/ MONITORING WELL(S)
- PROPOSED PROFILE BORING/ MONITORING WELL(S) (PENDING DATA)
- EXISTING MONITORING WELL
- EXISTING TEMPORARY WELL
- EXISTING PUBLIC SUPPLY WELLS
- TRANSECTS
- EPA OU1 BOUNDARY
- 100 PPB (UG/L) CVOCS AT 150 FEET BGS (DASHED WHERE INFERRED)
- 100 PPB (UG/L) CVOCS AT 200 FEET BGS (DASHED WHERE INFERRED)
- 100 PPB (UG/L) CVOCS AT 285 FEET BGS (DASHED WHERE INFERRED)

NAD 1983 STATE PLANE NEW YORK ISLAND FEET

0 175 350

SCALE IN FEET

FIGURE 3
PDI SAMPLE LOCATIONS - EASTERN PLUME

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

3.0 ROLES AND RESPONSIBILITIES

All employees and contractors are ultimately accountable for implementing their assigned responsibilities and activities to achieve health and safety goals and objectives, as well as compliance with applicable health and safety legal requirements.

3.1 Project Coordinator

- Delegate select activities to the Supervising Contractor(s)
- Delegate certain responsibilities to the Eastern Plume Supervising Contractor, EnSafe Inc., as approved by U.S. EPA.
- Prepare and organize the preparation and review of the overall work plan
- Initiates and leads development of the HASP for the OU1 work activities
- Obtain permission for Site access and coordinate activities with regulatory agencies

3.2 Project Health and Safety Officer

- **May be delegated to Supervising Contractor(s)**
- Ensure all management and affected employees are aware of the applicable Safety Management System and enforce the same
- Reviews and approves the project HASP and revisions
- The project coordinator will coordinate incident investigations or other reports about the Site's environmental health and safety systems
- Conduct and/or facilitate training, as outlined in this HASP
- Make sure that management and affected stakeholders are aware of the incident and hazard reporting requirements; ensure its enforcement
- Hold all assigned responsible parties accountable for non-compliance with the program

- Support the project coordinator in providing all materials and resources needed for effective implementation of this HASP
- Update the work-related incidents, injuries, and illnesses reporting tracking parameter monthly
- Designates "competent persons" as needed for select hazardous tasks

3.3 Eastern Plume Supervising Contractor Project Manager (EnSafe)

- Performs functions delegated by project coordinator
- Provides oversight to subcontractors working at the Site, as directed by the project coordinator
- Prepare and submit the Eastern Plume HASP
- Report releases of hazardous substances to the appropriate authorities during the project
- Ensure that all appropriate actions are taken in the event of an emergency or release
- Ensure that the work is completed on schedule
- Direct implementation of the work plan
- Direct implementation of, and ensure compliance with, the HASP
- Support the project health and safety officer (PHSO), site health and safety officer (SHSO), or designated competent person to ensure that safety and health requirements are met
- Prepare support files on the field activities and any final reports
- Designate SHSOs for select field tasks

3.4 Eastern Plume Site Safety and Health Officer (EnSafe)

- Provides safety oversight for work at the Site

- Reports all site-specific safety issues and concerns to the Project Coordinator, Project Manager, and/or the EnSafe Corporate Health and Safety Manager.
- Review the HASP daily to identify any potential changes necessary based on changes in conditions or work plans
- Conduct periodic health and safety inspections
- Direct implementation of the HASP for tasks performed on the Site
- Ensures that personal protective equipment (PPE) is used appropriately on the Site
- Controls entry and exit of personnel in authorized areas
- Coordinates safety and health program activities with onsite essential personnel
- Monitors the "work parties" for signs of stress, such as cold exposure, heat stress, and fatigue
- Monitors onsite hazards and conditions
- Ensures that all required safety equipment is available
- Advises Site personnel of potential chemical exposures and consequences
- Is aware of plant emergency procedures, evacuation routes, and the telephone numbers of the ambulance service, local hospital, poison control center, fire department, and police department
- Notifies, when necessary, local emergency officials
- Coordinates emergency medical care
- Orders a cease of work activities if required for any emergency situation

3.5 Subcontractors

- Safely completes the onsite tasks required to fulfill the work plan

- Complies with the HASP and other safety instructions
- Notifies SHSO of any unsafe conditions
- Does not perform work onsite unless authorized to do so
- Delegates Stop Work Authority to employees

3.6 Other Local/State/Federal Agency Representatives

- U.S. EPA representatives and other regulatory personnel receive a safety briefing upon arrival at the Site
- Follow safety instructions provided by the SHSO

3.7 Competent Persons

An Occupational Safety and Health Administration (OSHA) "competent person" is defined as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them" (29 Code of Federal Regulations 1926.32[f]). By way of training and/or experience, a competent person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, and has the authority to correct them. Some standards add additional specific requirements that must be met by the competent person. Examples of tasks that require competent persons include the following:

- Erection and/or use of scaffolding
- Working at heights
- Entering a confined space
- Hoisting and rigging
- Excavation and trenching
- Operating a crane

Work requiring a task-specific competent person is not anticipated on this Site. However, if competent person tasks are performed, the PHSO will be responsible for ensuring appropriate designation of the competent person.

4.0 DOCUMENTATION AND PROCEDURES

All injuries, accidents, near misses, and spills must be reported immediately to the EnSafe Corporate Health and Safety Manager.

Onsite Reviews/Audits

Jobsite safety inspections will be conducted on a weekly basis by the SHSO or designee.

Post-Work Debriefing Reviews

Post-work debriefing reviews will be scheduled on an as-needed basis. Job hazard analyses and other field procedures will be evaluated periodically to determine appropriateness to site tasks. Procedures will be reviewed with EnSafe personnel and subcontractors, as needed, to assess lessons learned.

Incident/Accident Procedures

In the event of a serious near miss or an accident on the jobsite an Incident Investigation will be conducted to determine the root cause of each incident and determine the appropriate corrective action(s) to prevent the event from occurring again. In the event of an incident/accident the Site will immediately notify the EnSafe Corporate Health and Safety Manager. The Project Manager and Corporate Health and Safety Manager will then initiate the investigation process using the Site employees and site subcontractors as an investigative team. The results of the investigation will be shared with all applicable parties including the client. Work shall be halted until any immediate unsafe acts and or conditions are mitigated.

5.0 SITE HAZARDS

Site hazards can be categorized into four broad areas: physical, chemical, environmental (severe weather), and biological. The SHSO is responsible for monitoring conditions at the Site, identifying hazards, and informing personnel of such hazards. Hazards can be introduced over time as work and processes change, equipment or tools become worn, maintenance is neglected, or housekeeping practices decline. For hazards not addressed by this HASP, the SHSO will utilize the Safe Work and Assessment Permit (SWAP) (Appendix A) to document, assess, and communicate such hazards to personnel onsite.

5.1 Site-Specific Briefing for Visitors

A site-specific briefing will be provided to all visitors who enter the Site beyond the Site entry point. The site-specific briefing provides information about site hazards, layout, work zones, places of refuge, emergency evacuation procedures, and other pertinent safety and health information.

5.2 Physical Hazards

Multiple physical hazards are present at the Site, including uneven work surfaces (creating slip, trip, and fall hazards), underground utilities, and operation of heavy equipment.

5.2.1 Slips, Trips, and Falls

Workers are required to walk as running greatly increases the probability of slips, trips, and falls. Hazards such as uneven terrain, curbs, and other hazards can result in an incident if not identified and controlled. Avoiding these areas may not be possible based on the need to access certain areas. To reduce the risk, workers must have proper footwear (e.g., work boots), continually scan the area while walking, face the direction of travel, and avoid distractions.

5.2.2 Underground Utilities

The Supervising Contractor (or designated representative) shall contact the required state, county, or local utility companies to locate all underground utilities before conducting any invasive activities. All underground utility markers will be maintained throughout the length of the project and exercise extreme caution when digging around all utilities. The SHSO will utilize the EnSafe Subsurface Utility Checklist (Appendix B) to document the subsurface utility location activities.

5.2.3 Heavy Equipment

Heavy equipment such as drill rigs, front loaders, dump trucks, and excavators may be necessary for select tasks. Site personnel working near heavy equipment are at risk of being struck by moving equipment or caught between a piece of moving equipment and another stationary object.

Work areas, where heavy equipment is used, will be marked and barricaded. Unnecessary foot traffic will be eliminated in these barricaded work areas. Ground personnel entering a work area where there is equipment operating shall make their presence known to all operators in the area. When use of heavy equipment is expected for excavation, trenching, or lifting, the affected subcontractor(s) will submit supplemental safety plans for such activities to the PHSO.

5.2.4 Noise Control

Personnel shall wear appropriate hearing protection devices in areas where sound levels could exceed the OSHA permissible exposure limit for noise of 90 decibels measured on the A-weighted scale for an 8-hour time-weighted average, including when drill rigs or other heavy machinery is operating. A rule of thumb is to wear hearing protection if personnel must raise their voices to be heard at arm's length.

5.2.5 Vehicle Hazards

Site activities will be performed in the sidewalks of active roadways and parking lots. EnSafe personnel and EnSafe subcontractors shall maintain a physical boundary of the work area to maintain safety of the workers and public in the work area. Effort will be taken to maintain the flow of traffic

without impacting the safety of the onsite employees, but if necessary, a portion of the traveled right-of-way in the parking lot will be closed.

5.3 Chemical Hazards

Chemical hazards may include soil and groundwater contaminants, spill residues, sampling preservatives, and/or hazardous chemicals that are used or stored at the Site. Management of chemical hazards will occur through hazard communication training, provision of chemical safety information to affected employees, implementation of engineering and administrative controls, and use of PPE.

The contaminants of concern at the Site are primarily VOCs. Table 1 lists the contaminants of concerns, associated odor thresholds, and occupational exposure limits.

Table 1
Exposure Guidelines for Contaminants of Concern

Chemical	Odor Threshold (with source)	OSHA PEL	ACGIH TLV	NIOSH REL
Tetrachloroethene	5 ppm (ATSDR)	100 ppm	25 ppm	(minimize exposures)
Trichloroethene	1.4 ppm (NJ DOH)	100 ppm	10 ppm	N/A
Vinyl chloride	10 ppm (Acute Exposure Guidelines for Selected Airborne Chemicals)	1 ppm	1 ppm	N/A
1,1,1-Trichloroethane	120 ppm (NJ DOH)	350 ppm	350 ppm	350 ppm

Notes:
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Limit
ACGIH TLV = American Conference of Industrial Hygienists Threshold Limit Value
NIOSH REL = National Institute for Occupational Safety and Health Recommended Exposure Limit
ppm = parts per million
ATSDR = Agency for Toxic Substances and Disease Registry
NJ DOH = New Jersey Department of Health
N/A = Not Applicable

The primary contaminant of concern at the Site is tetrachloroethene (also known as perchloroethylene). Effects resulting from acute (short-term) high-level inhalation exposure of humans to tetrachloroethene include irritation of the upper respiratory tract, eyes and kidney dysfunction, and neurological effects such as reversible mood and behavioral changes, impairment of coordination, dizziness, headache, sleepiness, and unconsciousness. Acute occupational inhalation exposures above 1 part per million (ppm) to tetrachloroethene are not expected during execution of Site tasks. The primary effects from chronic (long-term) inhalation exposure are neurological, including impaired cognitive and motor neurobehavioral performance. Tetrachloroethene exposure

may also cause adverse effects in the kidney, liver, immune system, hematologic system, and on development and reproduction. The U.S. EPA has classified tetrachloroethene as likely to be carcinogenic to humans.

Contamination is generally in the groundwater. Based on planned activities, the risk of occupational exposure is low. Potential routes of exposure include dermal contact and absorption, inhalation, and ingestion. These chemicals may also contaminate equipment, vehicles, instruments, and personnel (clothing, footwear, and skin). Significant occupational exposures to airborne iron or manganese from groundwater sampling and drilling activities are unlikely.

Safe work practices will be used to minimize exposure potential. Applicable safe work practices include avoiding contact with media (chemicals of concern residues, groundwater, etc.), screening with real-time direct-reading instruments where specified, use of PPE, proper decontamination (as necessary), and hand washing before conducting hand-to-mouth activities. The SHSO will monitor VOC concentrations during drilling activities using a photoionization detector (PID), as described in Section 10 of this HASP.

5.4 Environmental (Severe Weather) Hazards

Severe weather may present hazards and risks that must be considered during field work. To prepare, the SHSO will monitor potential weather conditions and consider their impact on field activities. Severe weather may include thunderstorms, lightning, and/or tornadoes.

The National Weather Service may issue severe weather watches or warnings. A watch means that conditions are favorable for development, and people should be aware and monitor weather information. A warning means that activity has been sighted or detected by radar and people should take protective actions immediately.

Information on current warnings and current weather in the area may be found at www.weather.gov.

If severe weather may threaten the area, the SHSO and field workers shall monitor the local weather information sources. This may require workers to utilize identified shelter-in-place locations depending on the type of weather.

5.5 Biological Hazards

Biological hazards that may be present at the Site include poisonous plants, insects, and animals.

5.5.1 Insects

Ticks

Ticks are present at the Site. It is important to remember that ticks are active year-round, even with snow cover and temperatures below freezing. When working at the site personnel should wear light colored clothing and shirts with long sleeves. Pants should be tucked into socks. Alternatively, tick gaiters can be worn. Long loose hair should be covered, braided, or otherwise tied back.

Tick repellant sprays may be used. Products containing DEET can be used to treat clothing or be sprayed onto the skin. Permethrin can be used, but this spray should only be used on clothing and never on skin. It is recommended to pretreat your clothes with Permethrin prior to an event. For all sprays, follow the manufacturer's recommendations.

Mosquitos

Mosquitos are present at the Site. Mosquitos bites potentially carry disease, such as West Nile Virus, and Eastern Equine Encephalitis. As with ticks, the best protection is long sleeved shirts and sprays containing DEET or Permethrin.

Other Insects and Spiders

The Site is home to a variety of insects. Some, such as bees, wasps, spiders, and ants, can make nests inside monitoring wells or other site features. Bug spray or wipes can be used to mitigate the chance of injury. Caution should be used when opening monitoring wells to ensure that site personnel are not bitten or stung. If a site worker is bitten or stung make sure to clean and disinfect the wound. Some people may be allergic to certain insects or spiders and may suffer reactions. The most extreme reaction is an allergic reaction known as anaphylaxis; however, other symptoms may include hives, shortness of breath, wheezing, weakness, sweating, chills, headache, body aches, stomach cramps, leg cramps, rapid pulse, and exhaustion.

If a site worker displays any of these symptoms, take them to the Nassau University Medical Center or call 911.

5.5.2 Poisonous Plants

Poison Ivy, Poison Oak, and Poison Sumac all possess an irritating, oily sap called urushiol that typically triggers allergic reactions when it comes into contact with the skin. Wearing protective clothing (i.e., long-sleeve Tyvek), use of protective creams, and using good personal hygiene practices will reduce the potential suffering from contact with poisonous plants.

If a site worker comes in contact with Poison Ivy, Poison Oak, or Poison Sumac, it should be treated with a lotion such as Tecnu. Rub the affected area with Tecnu to remove the urushiol oil and alleviate the itching and/or rash. If symptoms persist, see a doctor.

5.5.3 Poisonous Snakes and Reptiles

Poisonous snakes and reptiles may be a nuisance in any investigation area. When working in areas that support habitat for poisonous snakes or reptiles, personnel shall wear protective chaps made of heavy puncture-resistant material designed to prevent snake bites to the legs. Anytime personnel are required to work in an area that supports habitat for snakes or reptiles, the buddy system will be employed where no less than two people may work in an area and they must remain in eye contact with each other. Before initiating work in an area that supports habitat for snakes, tall grasses and scrub brush will be mowed or cleared to decrease the possibility of snake or reptile encounters.

If a snake or reptile is encountered, at no time should personnel attempt to confront it. If the snake or reptile does not leave the immediate work area, work shall be shifted to another area until the snake or reptile leaves.

If personnel are bitten by a snake or reptile, the buddy must keep the victim calm and keep the bitten area below the level of the heart. The buddy will then contact emergency services and prepare for transportation to the nearest emergency room.

6.0 SITE TASKS

6.1 Field Investigation Tasks

Site tasks include the installation of vertical profile borings and related monitoring wells, groundwater sampling, and associated field tasks as described in the Eastern Plume FSP (EnSafe, April 2022).

6.2 Field Equipment

Equipment to be used during Site tasks include:

- Company/rental vehicles
- Hand auger/shovel
- Hand tools, including but not limited to wrenches, screwdrivers, wire snips, clamps, hammers
- Groundwater monitoring sampling pumps, water quality meters, and related equipment
- PID
- Rotosonic drill rig and support equipment for monitoring well installation (subcontractor)

6.3 Job Hazard Analyses

Job Hazard Analysis forms, documents that allows employers and supervisors to manage, examine, and document risks involved in certain hazardous workplace activities, associated with the site tasks are presented in Appendix C.

6.4 Anticipated High-Risk Activities

No high-risk activities, meaning those tasks that involve a job function or activity that has one or more critical steps that have the potential to create a mishap that involves serious injury or death are anticipated during remedial action. Examples of these activities include, but are not limited to, locking out hazardous energy, entering a confined space, working at heights, hoisting, and rigging.

7.0 TRAINING

All employees working onsite exposed to hazardous substances, health hazards, or safety hazards, along with their supervisors and management responsible for the Site, shall receive training meeting the requirements of 29 CFR 1910.120(e). Employee training shall cover the following topics:

- Names of personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on the Site
- Use of personal protective equipment
- Work practices by which the employee can minimize risks from hazards
- Safe use of engineering controls and equipment on the Site
- Medical surveillance requirements including recognition of symptoms and signs which might indicate overexposure to hazards
- Contents of the HASP

The initial training shall include a duration of at least 40 hours of instruction (unless permitted otherwise by 29 CFR 1910.120[e]). Employers shall provide at least 8 hours of refresher training annually. Employers shall maintain a written certificate of training for employees.

Additional training may be necessary to address other hazards. Such training may include, but is not limited to, working at heights, lockout-tagout, and confined space entry. The PHSO will identify additional training necessary for specific site tasks.

The SHSO may provide periodic supplemental safety training sessions (i.e., "toolbox talks") to address specific hazards or safety concerns as they arise. The SHSO will document attendance and the topics covered for such supplemental safety training sessions.

The SHSO shall maintain documentation that all employees working on the Site have received and understand the contents of this HASP. The SHSO will use the HASP Acknowledgement Form (Appendix D) for such documentation.

8.0 PERSONAL PROTECTIVE EQUIPMENT

To minimize exposure to hazards capable of causing workplace injuries and illnesses, PPE will be worn onsite. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. PPE may include items such as gloves, safety glasses, protective footwear, earplugs, hard hats, respirators, coveralls, and reflective vests. The use of Level D or Modified Level D protection is appropriate for the planned work at the Site.

Level D protection includes a work uniform, safety footwear, and safety glasses and is used for nuisance contamination only. Employees are expected to use Level D protection at all times at the Site. Modified Level D protection may include reflective vest, chemical-resistant coveralls, chemical resistant gloves, leather work gloves, hard hat, and/or chemical splash goggles. The need for such additional PPE is based upon the specific hazards involved, as documented in the Job Hazard Analyses. The SHSO will determine such need before execution of select tasks.

9.0 MEDICAL SURVEILLANCE AND RESPONSE

Since employees (1) will not likely be exposed to hazardous substances above permissible exposure limits for 30 days or more in a year and (2) will not likely wear a respirator for 30 days or more in a year, while performing site tasks, a medical surveillance program is not required for such employees. However, if employees are injured, become ill, or develop signs or symptoms due to possible exposure to hazardous substances on the Site, such employees shall receive a medical examination and consultation by a physician, as specified in 29 CFR 1910.120(f). Employers shall maintain accurate records of such medical examinations and consultations for affected employees.

The Supervising Contractor will maintain a first aid kit at the Site. For medical emergencies, personnel shall call 911 to summon local emergency medical services. Employers shall report all injuries and illnesses (including first aid cases) to the SHSO.

The nearest acute care hospital with emergency services is the Nassau University Medical Center.

10.0 ENVIRONMENTAL AND PERSONAL MONITORING

Airborne contaminants can present a significant threat to worker health and safety. Thus, identification and quantification of these contaminants through air monitoring is an essential component of a health and safety program. Air monitoring may also be used to assess occupational

exposures to hazardous air contaminants, verify effectiveness of engineering controls, and determine the appropriate level of respiratory protection.

Employee exposures to airborne contaminants are compared to established occupational exposure limits, such as those published by the OSHA, American Conference of Governmental Industrial Hygienists, or National Institute for Occupational Safety and Health. A list of potential air contaminants and their respective occupational exposure limits can be found in Table 1.

10.1 Volatile Organic Compound Monitoring

The SHSO or other designated person will use a PID with a 10.6 eV lamp during drilling activities to detect the presence of VOCs. Background levels will be determined and noted before recording the level at the extraction points. The background readings will be taken away from areas of potential contamination. These readings, any influencing conditions (i.e., weather, temperature, humidity) and site location will be documented by the SHSO.

The frequency of real-time air monitoring (with the PID) will be every 15 minutes after the background level is established and before a change in operations that might increase the risk of exposure. An action level of 1.0 ppm will be established. At VOC concentrations equal to or less than 1.0 ppm, no additional precautions are necessary. If the VOC concentration exceeds 1.0 ppm, site personnel shall move away from the area, wait at least 5 minutes for the area to naturally ventilate, and take another measurement.

If VOC concentrations consistently exceed 1.0 ppm (for a sustained period of 5 or more minutes), stop work, move away from work area, and contact the PHSO for guidance. The PHSO may call for supplemental air monitoring (e.g., personal breathing zone air samples or Draeger tube samples) to further characterize occupational exposures.

10.2 Community Air Monitoring

EnSafe will also perform community air monitoring in accordance with New York State Department of Health Generic Community Air Monitoring Plan, Appendix 1A of Technical Guidance for Site Investigation and Remediation (DER-10), as described in the Eastern Plume Site Management Plan (EnSafe, April 2022).

10.3 Instrument Calibration

The PID will be maintained and field-calibrated by qualified field personnel. Operational checks and field calibration will be performed on the PID each day before their use according to manufacturer's recommendations. The PID will also receive field calibration at the end of each day to determine any

significant instrument drift. Periodic operational checks or re-calibration using calibration gas should be performed if elevated readings are noted during the day to ensure there is limited instrument drift. These operational checks and calibration efforts will be performed in a manner that complies with the manufacturer's recommendations. All calibration efforts shall be documented.

Calibration information will be recorded in a field operations logbook as appropriate. Required information includes the following:

- Date calibration was performed
- Individual calibrating the instrument
- Instrument name, model, and serial number
- Relevant instrument settings and resultant readings (before and after) calibration
- Identification of the calibration standard (lot no., source concentration, supplier)

11.0 SITE CONTROL MEASURES

The purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. Site control is especially important in emergencies.

11.1 Site Work Zones

An essential element of any hazardous substance release site is the establishment of safety or work zones. These zones are established primarily to reduce the accidental spread of hazardous substances by workers or equipment from contaminated areas to clean areas. Safety zones specify:

- The type of operations that will occur in each zone
- The degree of hazard at different locations within the release site
- The areas at the site that should be avoided by unauthorized or unprotected employees

Contaminated sites are divided into as many different zones as needed to meet operational and safety objectives. The OU1 work areas will be broken down into two zones:

- Work Zone — This is the area where invasive, physical, or chemical activity is occurring and access to this area will be restricted to authorized personnel only.

- Support Zone — This is the area where support activities can be conducted without concerns for the invasive, physical, or chemical hazards. Although controlled, this area is less restrictive than the work zone. The support zone includes all areas within the property boundary that are outside of the work zones.

Employees are expected to use the buddy system. Working alone at the Site is not permitted. Employees must work with at least one other person onsite. Employees working onsite shall maintain regular communication with other employees. Based on the limited size of the Site, special communication systems are not necessary.

11.2 Site Security

Site security is maintained through use of temporary fencing and barricades around the staging and work areas. This helps to prevent unauthorized access to the Site, establishes a boundary to minimize exposure of unauthorized people to site hazards, and prevents theft of equipment from the Site.

Visitors will sign-in with the SHSO who will approve all visitors to the Site, make sure they have a valid purpose for entering the Site, and designate trained Site employees to accompany visitors at all times while onsite.

11.3 Traffic Control

Hazards associated with vehicular and equipment traffic are likely to exist during select site activities, such as working near roadways. Site personnel will be instructed to maintain awareness of traffic and moving equipment when performing site activities. When working near roadways, site personnel will wear high visibility vests, deploy traffic cones, use flashing lights, or other means to warn oncoming traffic of worker activities. The SHSO will develop a work zone plan when working on or near roadways.

11.4 General Rules of Conduct

The following general rules of conduct are required for anyone working on this project:

- Contraband items are prohibited. Contraband refers to any item that, relating to its nature, is illegal to be possessed or sold. Additionally, contraband items may include any item that may be restricted on the project site by client (or agency), may introduce hazards to the worksite, or violate security regulations and other established guidelines. Examples may include weapons, animals, laser pointers, illegal narcotics, and alcohol.

- Any violation of local, state, or federal laws or conduct outside the generally accepted moral standards of the community is prohibited.

- Willfully damaging, or destroying property, or removing records is prohibited.

- Misappropriation or unauthorized alteration of any record is prohibited.

- Gambling in any form, selling tickets or articles, taking orders, soliciting subscriptions, and taking up collections are prohibited.
- Compliance with posted signs and notices is required.
- Boisterousness and noisy or offensive work habits, abusive language, or any oral, written, symbolic, or other communication that tends to disrupt work or morale of others is forbidden.
- Fighting or threatening bodily harm to another person is prohibited.
- Defacing any property is prohibited.
- Wearing any type of offensive logos, pictures, or phrases on clothing is prohibited.
- Shirts, shoes, pants, slacks, or coverall-type garments will be worn at all times.
- People operating motor vehicles will obey all laws and regulations.

11.5 Sanitary Facilities and Lighting

Site personnel shall be equipped with the capability to perform basic hygiene functions. This may be accomplished by means of fixed facility assets or by use of field hand wash items.

Sanitary facilities, permanent or temporary, will be located at the staging area. The requirements for sanitary facilities onsite will meet all applicable standards found in CFR 29 1910.120 (n) (3).

Work activities are currently planned for daylight hours only; however, should the need arise for nighttime operations, the lighting scale shown in Table 2 will be used.

Table 2
Minimum Lighting Levels

Minimum Foot-Candles Needed	Area or Operations
5	General site areas
3	Excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas
5	Indoors, warehouses, corridors, hallways, and exit ways

Table 2 Minimum Lighting Levels	
Minimum Foot-Candles Needed	**Area or Operations**
5	Tunnels, shafts, and general underground work areas (exception: minimum of 10-foot candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Safety and Health Administration-approved cap lights shall be acceptable for use in the tunnel heading.)
10	General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dressing rooms, dining areas, and indoor toilets and workrooms)
30	First-aid stations, infirmaries, and offices

12.0 DECONTAMINATION

Decontamination is the process of removing or neutralizing contaminants that have accumulated on personnel and equipment. It is critical to health and safety at hazardous waste sites. Decontamination protects workers from hazardous substances that may contaminate and eventually permeate the protective clothing, tools, vehicles, and other equipment used onsite; it protects all site personnel by minimizing the transfer of harmful materials into clean areas; it helps prevent mixing of incompatible chemicals, and it protects the community by preventing uncontrolled transportation of contaminants from the Site.

Decontamination procedures will be performed specific to site tasks and are outlined in the Eastern Plume FSP (EnSafe, April 2022).

13.0 EMERGENCY ACTION PLAN

IN THE EVENT OF AN EMERGENCY IMMEDIATELY CALL 911. NOTIFY THE OPERATOR OF THE EXACT LOCATION (WITHIN THE SITE IF APPROPRIATE). IF IT IS SAFE TO DO, STANDBY THE FRONT GATE OR NEAR IT OFFSITE TO DIRECT EMERGENCY RESPONDERS TO THE APPROPRIATE AREA.

13.1 General Emergency Procedures

The purpose of an Emergency Action Plan is to facilitate and organize employer and employee actions during workplace emergencies. All site personnel must be aware of these procedures to mitigate further injury or loss before start of work. However, site personnel are not expected to respond in an emergency. This plan requires that all personnel move to safe rally point or otherwise evacuate the Site.

13.2 Emergency Communications

The primary emergency communications method between workers will be by mobile telephone.

During any emergency, contact first responders immediately. Once emergency responders have been notified, ensure that the following persons are notified of the incident and any details possible. Telephone numbers for emergency organizations are listed in Table 3:

Table 3
Emergency Contacts

Physical Address
Staging Area: 89/101 Frost Street, Westbury, New York
Work Areas: Drainage Basin 51 and Choir, Cameo, and Crystal Lanes, Salisbury, New York

EMERGENCY – POLICE, FIRE, AND AMBULANCE	**Emergency 911**
Ambulance – Westbury Fire Department	516-334-7968
Fire – Westbury Fire Department	516-334-7968
Police – Nassau County Police Department	516-573-6300
Hospital – Nassau University Medical Center	516-572-3311
Minor Medical Treatment – 1Source Occupational Health	866-622-7348
National Capital Poison Center	800-222-1222
NYSDEC SPILLS	800-457-7362
U.S. EPA Officer Thomas Mongelli	212-637-4256
U.S. EPA Officer (Alternate) Pietro Mannino	212-637-4287
U.S. EPA Officer (Alternate) Joseph Rotola	732-321-6658
National Response Center	800-424-8802
Utilities in the work areas will be added to this list once markouts are complete.	

Telephone numbers for primary site contracts are listed in Table 4.

Table 4 Primary Site Contacts		
Title	**Category**	**Data**
EnSafe Site Health and Safety Officer	Name	TBD
	Work	TBD
	Mobile	TBD
EnSafe Project Manager	Name	Alexandra Stark astark@ensafe.com
	Work	860-665-1140 x6022
	Mobile	401-212-0149
EnSafe Corporate Health and Safety Manager	Name	Scott Campbell scampbell@ensafe.com
	Work	901-937-4255
	Mobile	504-377-2619
Project Health and Safety Officer	Name	TBD
	Work	TBD
	Mobile	TBD

13.3 Personnel Roles

The Site SHSO serves as the emergency coordinator. The SHSO directs evacuation activities at the Site and may facilitate evacuation of non-ambulatory personnel to the assembly area. The SHSO understands the emergency procedures and is prepared to assume his/her responsibilities promptly and calmly in an emergency. The SHSO maintains an accurate roster of all people onsite if an evacuation is necessary. The SHSO assigns roles as necessary for emergency operations.

13.4 Evacuation Routes and Rally Points

The main rally point is the staging area at 89/101 Frost Street, Westbury, New York. Additional rally points will be established once work begins.

13.5 Shelter-in-Place

Shelter-in-place means finding a safe location indoors and staying there until you are given an "all clear" or told to evacuate. Personnel may be asked to shelter-in-place because of an active shooter, tornado, chemical, radiological, or other hazards.

The primary shelter-in-place location for onsite personnel is the staging area at 89/101 Frost Street, Westbury, New York. Additional shelter-in-place locations will be determined once work begins.

13.6 Unexpected Hazards

If there is any doubt regarding the degree of hazard of particular circumstance and personnel are unsure as to what measures to take or what protective equipment to utilize, employees shall stop work immediately, secure the area, evacuate from the suspected hazard area, and contact the SHSO.

Personnel will be given proper direction on how to proceed. Many accidents can be avoided by simply removing personnel from the hazard and maintaining good communication.

13.7 Employee Injury

If a member of the field crew suffers a personal injury, then the SHSO will call 911 (serious injury) to alert appropriate emergency response agencies or administer onsite first aid (minor injury) as the situation dictates. A mishap report form will be completed for any such incident.

If a member of the field crew suffers a chemical exposure, then the affected areas should be immediately flushed with generous amounts of clean water. If the situation dictates, the SHSO should alert appropriate emergency response agencies or personally ensure that the exposed individual is transported to the nearest medical treatment facility for prompt treatment. A mishap report form will be completed for any such incident.

Emergency showers and/or eyewash equipment will be provided as the project dictates. OSHA requirements for emergency eyewashes and showers (29 CFR 1910.151[c]) state that "where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use."

13.8 Fire

If a fire or explosion occurs onsite, evacuate the Site immediately. Call 911 to summon the fire department. If the fire involves hazardous chemicals, then the emergency responders must be appropriately informed.

13.9 Chemical Spill

See Section 14 — Spill Containment.

13.10 Severe Weather Plan

Severe weather may present hazards and risks that must be considered during field work. To prepare, the SHSO must consider potential weather conditions and the plan of action that will be

taken during such occurrences. Severe weather may include thunderstorms, lightning, and/or tornadoes. During the event, the SHSO must monitor weather conditions.

Unless directed otherwise by the SHSO, all work shall stop and personnel shall retreat to the designated shelter-in-place location in the event of lighting or other acute weather situation.

The National Weather Service may issue severe weather watches or warnings.

- A watch means that conditions are favorable for development, and you should be aware and monitor weather information.

- A warning means that activity has been sighted or detected by radar and you should take protective actions immediately.

14.0 SPILL CONTAINMENT

During implementation of the work, contaminated and potentially contaminated media, including groundwater, surface water, and soils, will be handled. Spills or releases of this media may occur. Chemicals such as drilling fluids may also be handled.

To minimize the potential for releases and respond to those which may occur, the following procedures will be incorporated into site activities. For all purchased chemical products, a manufacturer Safety Data Sheet will be maintained onsite which will provide response and safety information.

14.1 Spill Prevention

All liquids and contaminated solids will be placed in containers appropriate to the material and constructed and designed to withstand site conditions. In addition, all containers must be labeled, identifying their contents and hazards, if any. If a chemical or other hazardous or biological material is removed from its primary container for use or dispensing, the secondary container must be labeled as well.

Containers must be located away from activities that may create damage, including heavy equipment operation, traffic, and loading/unloading areas.

Containers will be periodically inspected by the SHSO to determine if they are damaged, deteriorating, or leaking. The SHSO will take action to repair or replace containers as necessary.

14.2 Spill Response

14.2.1 General Response Procedures

If a chemical spill occurs onsite, immediately report the spill to the SHSO. The initial report shall include at least the following information:

- Time of the spill
- Identity of the material spilled
- Approximate quantity spilled
- Location and source of the spill
- Cause and circumstances of the spill
- Identify the person and their employer reporting the spill
- Extent of injury or property damage
- Extent of actual or potential environmental contamination, if known
- Information concerning the spill reaching or potentially reaching the storm sewer system
- Identification of the actions being taken in response to the spill
- Identification of the assistance required to respond to the spill

The SHSO will authorize spill containment if properly trained personnel with appropriate personal protective equipment are present.

The SHSO will determine if the spill represents a release to the environment. A release means any spilling, leaking, pumping, pouring, escaping, leaching, or disposing into the environment. The environment is defined as:

- The navigable waters of the U.S.

- Any other surface water, groundwater, drinking water supply, land surface, or subsurface strata, or ambient air within the U.S.

- The local project site storm sewer or wastewater treatment plant via the sanitary sewer.

Any release that gets outside of a building or outside of an impervious containment area should be considered a release to the environment.

The SHSO in consultation with the PHSO will determine if the quantity of material spilled represents a harmful (or reportable) quantity. A harmful (reportable) quantity is defined as that which:

- Violates applicable water quality standards
- Causes a film or sheen upon or discoloration of the surface of the water or adjoining shorelines, or sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines
- Enters the storm sewer system
- Includes a spill of 25 gallons or more to the environment
- Includes all spills that affect or threaten to affect navigable waters or adjoining shoreline

The SHSO will contact the Project Coordinator and PHSO. The PHSO will make appropriate notifications to authorities having jurisdiction.

For any spill of petroleum leaving the property and entering a drainage canal or storm drain, immediately notify NYSDEC SPILLS at 800-457-7362 and the U.S. EPA Officer .

For any spill determined to exceed the Reportable Quantity of a hazardous substance, or for a petroleum product that creates a visible sheen on surface water, immediately notify the National Response Center [800-424-8802]. The SHSO shall also prepare a description of the event as required by the National Response Center.

14.2.2 Chemical Spills

Small Quantity

Each subcontractor that brings hazardous chemicals to the Site will maintain a chemical spill kit. The spill kit will be used for immediate response to small spills. The spill kit will be designed for clean-up of small, low hazard spills that may occur and do not require specialized personnel protective equipment or spill control supplies. Its contents may vary depending on type and quantity of chemicals used onsite. A suggested list of contents includes the following:

- Chemical splash goggles
- Tyvek coverall
- Heavy nitrile or neoprene gloves

- Plastic dustpan and brush
- Heavy plastic bags
- Universal spill absorbent (1:1:1 mix of sodium carbonate, kitty litter, and sand), spill pillows, socks, or other suitable spill absorbents (enough to absorb a spill of the largest container in the work area)
- Other absorbents/neutralizers as required for the chemicals at the worksite
- Drain covers (if floor, sink, or yard drains are in the vicinity)

The above may be conveniently stored in a labeled plastic container that can also be used for containment and disposal of the spill cleanup wastes.

Subcontractors shall be trained to respond to small chemical spills involving their hazardous chemicals.

Subcontractors will use appropriate personal protective equipment and clean-up materials for spill response. Spent absorbent materials should be placed in appropriate containers (i.e., drums kept with the spill kits) for disposal offsite. All waste products generated by spill cleanup will be managed per applicable local, state, and federal regulations. All equipment used during spill cleanup operations should be immediately replaced in the spill kit to maintain inventory. The area will be inspected post-cleanup to verify that efforts were sufficient, and that waste was properly packed for offsite disposal.

Large Quantity Spill

Large quantities of chemicals will not be used at the Site.

14.3 Localized Transport

When transporting large, heavy, or a multitude of containers, a cart suitable for the load with high edges or spill trays that will contain any spills or leaks will be used. Two people should be involved when transporting large amounts of chemicals.

Use a drum dolly when moving 55-gallon containers. Carry glass containers in bottle carriers or another leak-resistant, unbreakable secondary container. Transport sampling containers in the boxed used to ship them to the Site or in coolers.

Use a gas cylinder handcart when transporting large gas cylinders. Ensure the cylinder is securely strapped to the cart.

14.4 Transferring Chemicals or Contaminated Media

When transferring chemicals between containers, do the following:

- Ensure that the receiving container is properly sized.
- When transferring liquids from large containers, use pumps, siphoning (not initiated by mouth), or other mechanical means instead of pouring.
- Use funnels and spill containment trays to catch leaks and spills when transferring liquids.
- Use approved safety containers when transferring flammable and combustible liquids.
- When transferring flammable liquid from drums, ensure that both the drum and receptacle are grounded and bonded together to avoid an explosion initiated by a static electric spark.
- Ensure that the materials are compatible before mixing.
- Label the secondary container with the material name, hazards, and manufacturer.
- Perform the material transfers only in locations with containment to capture or retard the escape of any spillage to the environment or drains.

15.0 HEALTH AND SAFETY PLAN REVISIONS

This HASP shall be revised if there is an identified change in site hazards, site contaminants, work tasks, and/or other newly identified risks.

16.0 REFERENCES

EnSafe Inc. *Field Sampling Plan – Eastern Plume, New Cassel/Hicksville Groundwater Contamination Superfund Site. Nassau County, New York.* April 2022.

- *Quality Assurance Project Plan – Eastern Plume, New Cassel/Hicksville Groundwater Contamination Superfund Site. Nassau County, New York.* April 2022.

- *Site Management Plan – Eastern Plume, New Cassel/Hicksville Groundwater Contamination Superfund Site. Nassau County, New York.* April 2022.

APPENDICES

Appendix A
Safe Work Assessment and Permit

Safe Work Assessment & Permit (SWAP) – T³ For Safety

This form must be filled out daily prior to any field work and reviewed with all project personnel in a daily safety brief.

Project Information

Project/Client Name: _____ **SWAP Date:** _____

Location or Address: _____ **Site Emergency #:** _____

General Description of Today's Work: _____ **Project #:** _____

If any work involves confined spaces, excavations, lock out tag out (LOTO), energized circuits, chemical exposure, or working at unguarded heights >4', contact the Corporate Health and Safety Manager or Senior Safety PM unless an approved HASP is in place.

Prior to performing any task, you must **Think Things Through (T³).** Each time you **T³** a task, you improve your ability to identify hazards and implement the correct controls, which reduces the risk of an incident.

T³ each task using the following questions. What hazards exist or actions taken could result in someone:

1. Being struck by or striking against something?
2. Being caught in or between two or more objects?
3. Slipping, tripping, or falling on the same level?
4. Falling from an elevated height?
5. Straining or overexerting themselves?
6. Coming into contact with any harmful substances?
7. Injuring another person?
8. Causing damage to equipment or materials?

Controls must be specific using the Hierarchy of Controls (see reverse): Elimination, Substitution, Engineering, Administrative, or Personal Protective Equipment.

Task 1:

Hazard:	Controls:
Hazard:	Controls:
Hazard:	Controls:

PPE required for this task:								
	Hard Hat	☒	Face Shield	☐	Gloves (specify type)	☐	Respirator	☐ Type:
	Safety Glasses	☒	Ear plugs	☒	High-Viz Vest	☐	Additional PPE:	
	Goggles	☐	Safety Shoes	☐	Protective Clothing	☐		

Task 2:

Hazard:	Controls:
Hazard:	Controls:
Hazard:	Controls:

PPE required for this task:								
	Hard Hat	☐	Face Shield	☐	Gloves (specify type)	☐	Respirator	☐ Type:
	Safety Glasses	☐	Ear plugs	☐	High-Viz Vest	☐	Additional PPE:	
	Goggles	☐	Safety Shoes	☐	Protective Clothing	☐		

THE LOCATION WHERE THE WORK IS TO BE DONE HAS BEEN EXAMINED AND NECESSARY PRECAUTIONS TAKEN FOR THE WORK.
I certify that the above-listed project has been evaluated for hazards and personal protective measures assigned and communicated with all EnSafe personnel on the jobsite. Changes in scope of work or work conditions may require modification of the existing SWAP or creation of a new SWAP.

SWAP Leader:	**Name:**	**Signature:**

I understand the hazards and will utilize the controls as noted above. (To be signed by all EnSafe personnel and subcontractors)

Safe Work Assessment & Permit (SWAP) – T³ For Safety

Subcontractors must provide their own job hazard analysis tool to validate their tasks and controls. Subcontractors signing this document merely verify that they participated in the EnSafe T³ safety process.

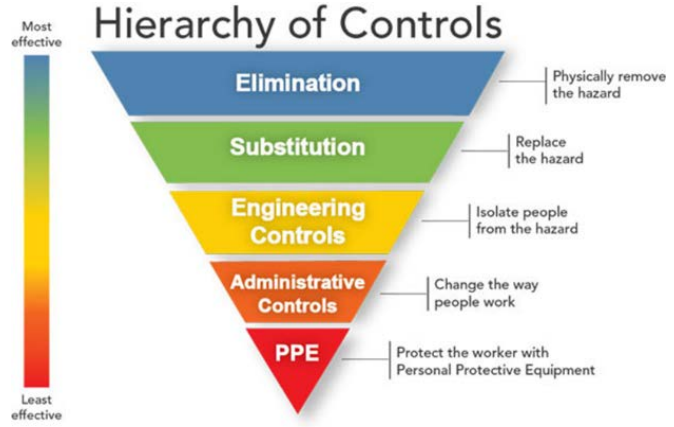
Name	Signature	Company	Name	Signature	Company

Comments:

Update SWAP as needed throughout the day. Keep focused on Recognizing Hazards and Reducing Risk! T³

Common Hazards (For reference only)	
Animals (snakes, etc.)	Machinery (unguarded)
Asbestos	Manual lifting
Chemical Exposures	Moving equipment (forklift, crane)
Combustible Material	Noise
Distractions	Other client activities
Dust	Other contractors
Energized circuits	Pinch points
Fall from heights	Poison plants (ivy, oak, sumac)
Flammable substances	Poor body positioning
Hand or Power tools	Radiation
Ignition sources	Sharp/rough edges
Inclement weather	Temperature extremes
Insects (wasps, spiders, ticks)	Traffic
Lead	Trapped pressure
Lifting/hoisting equipment	Underground/overhead utilities
Limited communication	Walking surfaces (slippery/uneven)

Control Identification Process



T³ PEER REVIEW: This section is to be completed by another EnSafe employee. Use this portion of the SWAP to review or observe a SWAP task(s) using the T³ process. Provide feedback to the SWAP Leader or Project Manager. Update or initiate a new SWAP as needed.

T³ Peer Review		
Task(s) included on the SWAP?	Yes	No
Hazard(s) identified for each task?	Yes	No
Control(s) identified for each hazard?	Yes	No
PPE selected for each task?	Yes	No

T3 THINK THINGS THROUGH

T³ feedback/recommendations provided to SWAP Leader or Project Manager:

Name and Signature: Date:

✓ Return completed form to your Project Manager or save in Project File
✓ Emergency Contact Info: Corporate Health and Safety: 901-937-4255 or 731-803-0935; Corporate HR: 901-937-4287

Additional Task Page

V. 05/01/2019

ENSAFE

Safe Work Assessment & Permit (SWAP) – T³ For Safety

Task 3:											
Hazard:					Controls:						
Hazard:					Controls:						
Hazard:					Controls:						
PPE required for this task:	Hard Hat Safety Glasses Goggles	☐ ☐ ☐	Face Shield Ear plugs Safety Shoes	☐ ☐ ☐	Gloves (specify type) High-Viz Vest Protective Clothing	☐ ☐ ☐	Respirator Additional PPE:	☐ Type:			

Task 4:											
Hazard:					Controls:						
Hazard:					Controls:						
Hazard:					Controls:						
PPE required for this task:	Hard Hat Safety Glasses Goggles	☐ ☐ ☐	Face Shield Ear plugs Safety Shoes	☐ ☐ ☐	Gloves (specify type) High-Viz Vest Protective Clothing	☐ ☐ ☐	Respirator Additional PPE:	☐ Type:			

Task 5:											
Hazard:					Controls:						
Hazard:					Controls:						
Hazard:					Controls:						
PPE required for this task:	Hard Hat Safety Glasses Goggles	☐ ☐ ☐	Face Shield Ear plugs Safety Shoes	☐ ☐ ☐	Gloves (specify type) High-Viz Vest Protective Clothing	☐ ☐ ☐	Respirator Additional PPE:	☐ Type:			

COVID-19 SWAP Addendum
March 2019

This document is intended to serve as an addendum to our Safe Work Authorization Permit (SWAP), a form that documents the daily health and safety meeting required on every job. COVID 19 (C19) symptoms, including fever, cough, and shortness of breath, may appear 2-14 days after exposure (i.e., a person could potentially be infected and spreading C19 without showing any symptoms). As such, there are certain measures you need to take in order to protect yourself, your family, your colleagues, and our clients from exposure to the disease and to curtail the spread of C19.

Before you mobilize to a client's site, you should develop a project specific checklist of tasks to be performed, potential contact or transmission pathways, and confirmation of appropriate PPE and disinfectant supplies. Below are some considerations before leaving for a client site.

Pre-mobilization Questionnaire

Risk Exposure Questions	**Yes**	**No**
Have had **Close Contact** exposure to a person with symptoms of COVID-19 during period from 48 hours before symptoms onset until the person meets criteria for discontinuing home isolation. (laboratory-confirmed disease or a clinically compatible illness)		
Experiencing fever (A measured temperature of 100.4 °F [38 °C] or greater, or feel warm to the touch, or a history of feeling feverish) accompanied by one or more of the following: Difficulty breathing (shortness of breath), tiredness, persistent cough		
Are currently **Self-Monitoring** or **Self-Observing** due to travel from another locale that has travel restrictions, health policies, advisories, or widespread ongoing transmission; or have been advised by Human Resources or a medical health care professional to do the same?		
Definitions: • Close Contact means being within approximately 6 feet (2 meters) of a COVID-19 case for a prolonged period • Discontinuing Home Isolation: At least 3 days (72 hours) have passed since recovery defined as resolution of fever without the use of fever-reducing medications and improvement in respiratory symptoms (e.g., cough, shortness of breath); and, at least 7 days have passed since symptoms first appeared. • Self-observation means people should remain alert for subjective fever, cough, or difficulty breathing. • Self-monitoring means people should monitor themselves for fever by taking their temperatures twice a day and remain alert for cough or difficulty breathing.		
If YES to any of these questions, contact your Manager and Human Resources directly and do not travel.		
General	**Yes**	**No**
Have **EnSafe Essential Services Letter** in physical possession?		
Have personal protective equipment (PPE) or decontamination supplies available?		
Aware of all client site or travel policies and restrictions?		
Aware of federal, state, or local travel restrictions and advisories in the area you are traveling?		
Aware of social distancing practices, proper hygiene and general health precautions		
If you answered NO to any of these questions, T3 with your Project Manager, Supervisor, and Corporate H&S Manager to implement additional protective measures.		

Scott Campbell (Corporate Health & Safety Manager) – (901) 937 4255 (direct line)
Caroline Smith (Human Resources) – (901) 937 4287 (direct line)

ADDITIONAL C19 INFO

If you develop emergency warning signs for C19 get medical attention immediately. Emergency signs include trouble breathing, persistent pain or pressure in the chest, new confusion or inability to arose, or bluish lips or face.

Consistent with EnSafe's T3 process, always be mindful of your work conditions. If you notice unsafe conditions, unnecessary risks, and/or unprotected hazards, please utilize your Stop Work Authority and correct the issues before proceeding.

GENERAL INFO/HYGEINE *(source: CDC.gov)*
There is currently no vaccine to prevent C19. The best way to prevent illness is to avoid being exposed. The virus is thought to spread from person-to-person via respiratory droplets (e.g., those produced during sneezing or coughing). Disinfect frequently-touched surfaces at least daily – most common EPA-registered household disinfectants will work. Clean your hands often using soap and hot water for at least 20 seconds or using a ≥60% alcohol hand sanitizer. Avoid touching your ears, eyes, nose, and mouth with unwashed hands.

PPE/EQUIPMENT
The worldwide C19 pandemic has created a shortage of certain equipment and PPE as demand exceeds supply. Before you travel to any jobsite and/or perform any task with PPE requirements, ensure an adequate supply of appropriate PPE. Keep in mind that PPE supplies are limited, and resupplying PPE may be difficult in the coming months; judiciously re-use PPE when it can be safely decontaminated. **If any questions on situational or general PPE use or quantities please contact Leo Old, or Scott Campbell.**

Voluntary Use Respirators: Voluntary use of respirators is permitted. EnSafers going to client sites to perform work have the flexibility to wear a respirator to provide an additional level of comfort and protection against C19. The types of respirators allowed under this program are **filtering facepiece** respirators (commonly referred to as "disposable respirators," "dust masks," or "single-use respirators"). Please note: The CDC does not recommend routine use of a respirator outside of a workplace setting (i.e., in the community).

If you choose to voluntarily wear a filtering facepiece, OSHA requires the following:

Appendix D to Sec. 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.
You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

WORKING TOGETHER

Distance yourself from others to the extent that is practicable. Use separated work areas, email or call instead of talking face-to-face, and keep at least six feet between yourself and others when possible. If equipment is shared with others, disinfect shared surfaces and wash your hands more frequently.

IF YOU FEEL SICK

If you experience C19 symptoms such as fever, cough, or difficulty breathing, stop work immediately, notify your supervisor, and contact Human Resources for direction. When you travel from the site avoid contact with others and limit potential transmission of illness. Also, self-quarantine until you are diagnosed and if you test positive for C19, call Human Resources as soon as possible. Informing EnSafe is critical to make sure that appropriate preventative measures are in place for your coworkers and clients.

Scott Campbell (Corporate Health & Safety Manager) – (901) 937 4255 (direct line)
Caroline Smith (Human Resources) – (901) 937 4287 (direct line)

Appendix B
EnSafe Subsurface Utility Checklist

Subsurface Utility Checklist

CORPORATE HEALTH AND SAFETY

****Complete in addition to the SWAP**

A *Qualified Utility Location Team Member* **MUST** be consulted and approve this site-specific form **BEFORE** fieldwork may commence if the answer to **ANY Question on the checklist is NO**). Use the Qualified Utility Location Team Members for the specific State/Region that fieldwork is performed.

Expedited approval (Telephone/Email/In Person) is possible prior to starting work operations, but advanced noticed is preferred to allow the reviewer time to look at maps/drawings of the site and all other relevant documents.

Please see *Explanations and Tips* below the checklist for tips on how to complete the checklist. Also use the *Insert Field Notes/Concerns Here* for comments/concerns to any of the checklist items and contact a Qualified Utility Location Team Member for the specific State/Region that fieldwork is performed.

Site Name & Address:	**Click or tap here to enter text.**	
EnSafe Project Number & Manager:	Project Number: Click or tap here to enter text. Project Manager: Click or tap here to enter text.	
Proposed Date of Field Work & Duration:	Click or tap to enter a date.	Click or tap here to enter text.
• ***Project Manager Signature AFTER* fieldwork has been completed:**	**SIGNATURE:**	

Underground Utilities (Public and Private Property) Requirements (A)=To be accomplished during planning stages. (B)=To be accomplished onsite before fieldwork activities			**Yes**	**No**
1(A). Has the "State-Specific One Call" been notified to mark the locations of all underground utilities? **Update One-Call if Fieldwork is Extended Past 2 Weeks After Inquiry.**			☐	☐
2(A). One-Call Ticket Info. **(Required by Law)**			☐	☐
Date Called:	Click or tap to enter a date.			
One-Call Phone#:	Click or tap here to enter text.			
Ticket Number:	Click or tap here to enter text.			
Beginning Date/Time:	Click or tap to enter a date.	Click or tap here to enter text.		
Expiration Date/Time	Click or tap to enter a date.	Click or tap here to enter text.		
Entities to be contacted separately:	Click or tap here to enter text.			
3(A&B). Have facility (and other relevant) personnel been interviewed and asked to provide copies of all available facility diagrams and drawings about underground utilities near the excavation area?			☐	☐
4(B). Has an onsite walk-through been accomplished to identify surface indicators of utilities?			☐	☐
5(B). Have the types/positions of underground utilities been marked on the surface by one-call and/or the facility? Do the field personnel understand how these utilities traverse underground?			☐	☐

6(A&B). Have the locations of utilities been inserted on the work area drawing(s)?	☐	☐
7(B). Has all available information concerning the type/location/depth of known underground utilities been given to the responsible supervisor or contractor at the work site for review and possible offset/relocation?	☐	☐
8(B). Have suitable cable and pipe locating devices (**PM/Qualified Utility Location Team Member approval**) been used to confirm position of the utilities?	☐	☐
9(B). Have appropriate tools (hand auger and/or equivalent technology) been used to dig trial holes **(minimum depth of 4 FEET below ground surface AND ideally to include the minimum diameter of downhole sampling tool, including any surficial materials)** to visually identify position/depth of the underground utilities, or to determine that utilities are not present within the test location? Depending on regional subsurface (Depth of Frost in NE part of USA) conditions, unground utilities may be buried deeper than 4 feet. All modifications regarding assumed depth shall be documented in the Field Notes/Concerns section on the next page.	☐	☐
Excavation Only	**10(B).** During excavation (always), a watch is kept for evidence of cables, pipes, or other underground utilities not previously identified.	
	11(B). If heavy equipment is required to cross an area where underground utilities are known to be present, the cross points are kept to a minimum and are clearly marked.	

Insert Field Notes/Concerns Here:
Click or tap here to enter text.

Checklist Submitted By:		***Qualified Utility Location Team (If Needed):***	
Name:	Click or tap here to enter text.	Name:	Click or tap here to enter text.
Signature:		Signature:	
Date:	Click or tap to enter a date.	Date:	Click or tap to enter a date.

Pre-Drilling/Excavation Utility Checklist (Explanations and Tips)

The instructions below have been developed to assist field personnel in accomplishing the tasks on the front of this form. If at any time field personnel are unclear on how to perform these necessary pre-job steps, refer to the Qualified Utility Location Team Members list below.

(A)=To be accomplished during planning stages (B)=To be accomplished onsite before fieldwork activities

Underground Utilities (Public and Private Property)
1(A). This is REQUIRED no matter if the work area is on public or private property. Borings/excavations should be located onsite before One-Call notification, if possible, with WHITE paint/flagging. **Update One-Call every 2 weeks, and locators need 3 working days to mark all utilities within the work area.**
2(A). This may be accomplished by telephone/internet. Most state-specific one-call agencies are open 8AM-5PM local time, Monday thru Friday.
3(A&B). This may happen the morning of the drilling/excavation activities to be performed. All personnel need to be aware of underground utilities within (or near) the work area. Offsets may be performed to minimize the probability of encountering underground utilities.
4(B). Example: light posts, valve pits, pit covers, curb/gutter inlets, manholes, surface indentations, saw cut areas, etc. This is best performed during the pre-bid site visit but may be performed immediately before activities.
5(B). One-Call color markings typically are as follows: WHITE (Excavation/Borings), RED (Power/Electrical), YELLOW (Gas/Petroleum), ORANGE (Communication/Fiber Optics), BLUE (Potable Water), GREEN (Sanitary/Storm Sewer). Review all colors and positions with field personnel prior to beginning drilling/excavating.
6(A&B). This refers to simply looking at the underground utilities onsite and plotting them (by hand initially) on the site drawing or aerial.
7(B). If NO, please explain. After all underground utilities have been plotted on the drawing, review the locations with the EnSafe PM, all personnel (including subcontractors), and the client if deemed necessary. This will help to orient all field personnel as to the location of the underground utilities within or near work operations. If the utilities are marked within a 3 horizontal feet lateral distance of the boring/excavation, offsets SHOULD be considered.

8(B). This refers to the use of a private utility locator to assist in locating underground utilities on private property that haven't been located by the One-Call system. This is highly dependent upon the makeup of the underground utility (metal, plastic, clay terra cotta, etc.) and complications due to rebar within concrete, multiple utilities crossing points, etc. Only previously trained personnel (most likely private utility locator and/or geophysical subcontractors) should use these devices. **The Qualified Utility Location Team Member(s) AND the EnSafe PM AND the client will make the decision** TOGETHER if a private utility locator is required.	
9(B). Example — hand augers, probe rod, vacuum extraction, air knife, post-hoe digger, etc. This is NON-NEGOTIABLE for drilling activities. Every boring must be advanced (without mechanical means) to a depth of four (4) feet below ground surface (or maximum boring depth if boring terminal depth is less than 4 feet). Only exception is where large boulder or bedrock in within the top 4 feet of the boring. Boring may be halted at a depth less than 4 feet if it is confirmed and documented that the boring is blocked by rock with apparent diameter greater than that of the boring/trial hole.	
Excavation Only	**10(B).** This is site-specific, but usually no closer than 3 horizontal feet from any and all underground utilities (especially lines with high pressure or voltage/flammable/combustible substances). The safe distance for overhead utilities is 10 horizontal - 10 vertical feet (up to 50kV). Stay alert at all times. All personnel (EnSafe and Subcontractors) have stop work authority in reference to underground utilities. No job is too important to compromise safety.
	11(B). The depth/alignment of the underground utility to be crossed should be determined to prevent damage to each buried utility.

Qualified Utility Location Team Members

CONTACT THE TEAM MEMBER THAT IS LOCAL TO THE PROJECT.

MEMPHIS, TN	Wesley Goodnight, Dave Fuehrer, Jason Broughton, Ben Brantley
NASHVILLE, TN	Greg Olin, Troy Estes
KNOXVILLE, TN	Brian Caldwell, Jerry Truitt, Lance Green
CHARLESTON, SC	David Warren, Steve Hodskins
BOWLING GREEN, KY	David Doyle, Ric Federico
CINCINNATI, OH	Jim Rathbone
CLEVELAND, OH	Ned Baker, Wendy Zayac
HARTFORD, CT	Rob McCarthy
LONDONDERRY, NH	Robert Francis
JACKSON, MS	Brian Derry
HOUSTON, TX	Todd Haverkost
DALLAS, TX	Tom Wiberg, Tanner Miller
JACKSONVILLE, FL	Tom Deck, John King
CONCORD, CA	David Dunbar
LONG BEACH, CA	Jim Madden
SAN DIEGO, CA	Daryl Hernandez
ADDITIONAL RESOURCES	Wesley Goodnight, Paul Stoddard, Jeff James, Scott Campbell

Appendix C
Job Hazard Analyses

Job Hazard Analysis (JHA)

Activity/Work Task: **Core Drilling Concrete (wet method)**	Overall Risk Assessment Code (RAC) (Use highest code)	**L**
Project Location: **9509 Macon Road, Cordova, TN 38016**	**Risk Assessment Code (RAC) Matrix**	
Project Number: **0888827727**		
Date Prepared: 12/9/2020		
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S		
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
	Probability				
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)
Traffic/ Pedestrian control plan may be required

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Recommended PPE:
X Safety Glasses With Sideshields **X** Safety-Toed Boots **X** Hard Hat **X** Nitrile Gloves **X** Leather Gloves ___ Hearing Protection ___ Flame Retardant Clothing

Job Steps	Hazards	Controls	RAC
1. Set up machine and work area. (delineate as necessary)	a. Slips, Trips and Falls b. Struck by vehicles c. Non workers (bystanders) d. Underground utilities.	1. Maintain housekeeping in the work area. Use three points of contact when accessing an elevated surface. 2. Watch for equipment operation and vehicular traffic. Follow the traffic control plan. Wear high visibility vests. 3. Work area should be delineated off from un-authorized personnel and signs posted. 4. Use and follow the subsurface underground utility checklist.	**L**
2. Core Drill Holes.	a. Slips, Trips and Falls b. Failure of equipment	1. Control the amount of water applied during drilling. Use only amount of water necessary. Repair/replace leaking fittings. 2. All connections, mountings, guards and controls on the equipment must be inspected prior to use. 3. All operators of this equipment shall be trained on that piece of equipment.	**L**

	c. Noise d. Dust	4. Operator must wear the proper PPE, (face shield, safety glasses 5. Wear hearing protection (ear plugs and/or muffs). 6. Use wet methods to control dust. If visible dust is present, a dust mask may be required for core drilling into concrete. NOTE: Voluntary use should be made available to personnel.	
3. Use a wet vac to clean up slurry.	a. Noise	1. Wear hearing protection (ear plugs and/or muffs).	

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	**Dust**
Monitoring Instrument(s):	
Applicable HASP Section(s):	**Air monitoring**

Additional Safety Considerations

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs ABC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Half Face respirator as needed. • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Appropriate work task gloves • First aid kit (located in vehicle). • Fire extinguisher (if in EnSafe field truck). **Respiratory protection may be required or may be used voluntarily**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Drill Rig 2. Hand tools	a. Drilling to be performed by competent person as certified by employer. b. Trained in the proper use of hand tools as required by 29 CFR 1926.	1. Equipment will be inspected daily by sample rig operator. Any safety deficiencies detected will require cessation of drilling activities until appropriate repairs have been made. 2. Inspect hand tools for damage prior to each use.

Physical Task Requirements

Please answer for the task being analyzed:

Yes	No	
	X	Ability to climb ladders.
	X	Ability to climb industrial stairs.
	X	Ability to climb ladder wells.
	X	Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
	X	Ability to operate from heights.
	X	Ability to wear Personal Fall Arrest System (PFAS).
X		Ability to wear tight-fitting face pieces (negative pressure respirators).
X		Ability to lift over 40 pounds.
	X	Operation of powered mechanical equipment (List equipment and training requirements in the section above).

Job Hazard Analysis (JHA)

Activity/Work Task: **DPT Sampling**	Overall Risk Assessment Code (RAC) (Use highest code) **M**
Project Location: **9509 Macon Road, Cordova, TN 38016**	
Project Number: **0888827727**	
Date Prepared: 12/9/2020	
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S	
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S	
Notes: (Field Notes, Review Comments, etc.)	

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Recommended PPE:

_X_ Safety Glasses With Sideshields _X_ Safety-Toed Boots _X_ Hard Hat _X_ Nitrile Gloves ___ Leather Gloves _X_ Hearing Protection ___ Flame Retardant Clothing

Job Steps	Hazards	Controls	RAC
1. Mobilization / Site Set Up	a. Loose material/equipment b. Equipment failure c. Equipment striking other objects d. Slips, Trips, Falls	1. All equipment will be properly secured during transport. All vehicles and equipment will comply with DOT requirements. 2. Never move the DPT rig with the mast upright. Ensure the sampling site foundation is stable and as level as possible. 3. Use a ground guide along with a functioning back-up alarm during equipment backing. 4. Clear trees, roots, weeds, limbs and other ground hazards from the drilling location. Practice good housekeeping to keep the ground around the drilling site clear of obstructions, equipment and other tripping hazards. Wear slip resistance footwear. Use caution when working on uneven and wet ground surfaces.	L

Job Steps	Hazards	Controls	RAC
2. Boring Process	a. Sharp/Jagged edges	1. Avoid contact with sharp/jagged edges. Use work gloves.	M
	b. Dermal Contact	2. Position body to avoid contact with sampled material. Wear protective clothing (Tyvek suit) if dermal contact with sampled material is unavoidable.	
	c. Slips, Trips, Falls	3. Clear trees, roots, weeds, limbs and other ground hazards from the drilling location. Practice good housekeeping to keep the ground around the drilling site clear of obstructions, equipment and other tripping hazards. Wear slip resistant foot wear. Use caution when working on uneven and wet ground surfaces.	
	d. Volatile Organic Compounds	4. If the results of previous surveys indicate the presence of VOC's in hazardous levels, rig operators should be prepared to protect both personnel and equipment for VOC inhalation and flammable atmospheres.	
	e. Underground utility strike	5. Inspect for buried and overhead utilities in the vicinity of the drilling location. Follow the subsurface underground utility checklist process.	

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	
Monitoring Instrument(s):	
Applicable HASP Section(s):	

Additional Safety Considerations

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs ABC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Appropriate work task gloves • First aid kit (located in vehicle). • Fire extinguisher (if in EnSafe field truck). **Tyvek suit may need to be worn.**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. DPT Rig	a. Sampling to be performed by competent person as certified by employer.	1. Equipment will be inspected daily by DPT rig operator. Any safety deficiencies detected will require cessation of sampling activities until appropriate repairs have been made.

Physical Task Requirements

Please answer for the task being analyzed:

Yes	No	
		Ability to climb ladders.
		Ability to climb industrial stairs.
		Ability to climb ladder wells.
		Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
		Ability to operate from heights.
		Ability to wear Personal Fall Arrest System (PFAS).
		Ability to wear tight-fitting face pieces (negative pressure respirators).
		Ability to lift over 40 pounds.
		Operation of powered mechanical equipment (List equipment and training requirements in the section above).

Job Hazard Analysis (JHA)

Activity/Work Task: **DPT Sampling**	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: **9509 Macon Road, Cordova, TN 38016**	**Risk Assessment Code (RAC) Matrix**	
Contract Number: **0888827727**	**Severity** / **Probability**	
Date Prepared: 12/9/2020		
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S		
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)
EnSafe will perform sampling while working with a drilling subcontractor. EnSafe personnel will stay clear of all DPT operations and will follow directions provided by the drilling supervisor while approaching DPT equipment in operation.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Recommended PPE:
X Safety Glasses With Sideshields **X** Safety-Toed Boots **X** Hard Hat **X** Nitrile Gloves **X** Hearing Protection **X** High Visibility Vest

Job Steps	Hazards	Controls	RAC
Mobilization / Site Set Up	1. Struck By	1. Stay clear of rig while it is moving around the site. Keep eye contact with the operator at all times. Wear high visibility vest so that you may be easily spotted by the drillers.	M
	2. Utility clearance	2. Inspect for buried and overhead utilities in the vicinity of the drilling location. An underground utility clearance approval shall be obtained from the client and/or utility companies prior to initiating intrusive operations.	
	3. Slips, trips, falls	3. Clear ground hazards from the drilling location. Practice good housekeeping to keep the area around the drilling site clear of obstructions, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.	
	4. Biological	4. Remain observant for hazardous biological life forms at all times. Do not attempt to relocate snakes or any other reptile. If a wild boar, mountain lion, or any other potentially deadly mammal is seen, exit the area and take appropriate shelter immediately.	

Drilling Operations	1. Struck By 2. Noise 3. Explosion	1. Stay clear of drill rig while it is being moved into position. Once the rig is positioned over the sample location, and drilling has commenced, stay clear of all moving parts and observe from a safe distance. 2. Hearing protection should be worn at all times when the drill rig is in operation. 3. Stay back while drilling is under way. The drill rig will be equipped with a blast shield.	**M**
Sampling Process	1. Dermal Contact 2. Splash	1. Wear nitrile gloves while handling sample material and/or sampling preservatives. 2. Safety glasses should be worn at all times to prevent contaminated material or preservatives from coming into contact with the eyes.	**L**

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	**Dust**
Monitoring Instrument(s):	
Applicable HASP Section(s):	**Air monitoring**
Additional Safety Considerations	

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs ABC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Half Face respirator as needed. • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Appropriate work task gloves • First aid kit (located in vehicle). • Fire extinguisher (if in EnSafe field truck).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Drilling Rig 2. Hand tools	a. Drilling to be performed by competent person as certified by employer. b. Trained in the proper use of hand tools as required by 29 CFR 1926.	1. Equipment will be inspected daily by sample rig operator. Any safety deficiencies detected will require cessation of drilling activities until appropriate repairs have been made. 2. Inspect hand tools for damage prior to each shift.

Physical Task Requirements

Please answer for the task being analyzed:

Yes	No	
X		Ability to climb ladders.
	X	Ability to climb industrial stairs.
	X	Ability to climb ladder wells.
	X	Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
X		Ability to operate from heights.
	X	Ability to wear Personal Fall Arrest System (PFAS).
	X	Ability to wear tight-fitting face pieces (negative pressure respirators).
X		Ability to lift over 40 pounds.
X		Operation of powered mechanical equipment (List equipment and training requirements in the section above).

Job Hazard Analysis (JHA)

Activity/Work Task: **Drilling Operations**	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: **9509 Macon Road, Cordova, TN 38016**	**Risk Assessment Code (RAC) Matrix**	
Contract Number: **0888827727**	**Severity** / **Probability**	
Date Prepared: 12/9/2020		
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S		
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)
EnSafe will perform sampling while working with a drilling subcontractor. EnSafe personnel will stay clear of all drilling operations and will follow directions provided by the drilling supervisor if the need to approach the rig arises.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Recommended PPE:
_X_ Safety Glasses With Sideshields _X_ Safety-Toed Boots _X_ Hard Hat _X_ Nitrile Gloves _X_ Hearing Protection _X_ High Visibility Vest

Job Steps	Hazards	Controls	RAC
Mobilization / Site Set Up	1. Struck By 2. Utility clearance 3. Slips, trips, falls 4. Biological	1. Stay clear of rig while it is moving around the site. Keep eye contact with the operator at all times. Wear high visibility vest so that you may be easily spotted by the drillers. 2. Inspect for buried and overhead utilities in the vicinity of the drilling location. An underground utility clearance approval shall be obtained from the client and/or utility companies prior to initiating intrusive operations. 3. Clear ground hazards from the drilling location. Practice good housekeeping to keep the area around the drilling site clear of obstructions, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces. 4. Remain observant for hazardous biological life forms at all times. Do not attempt to relocate snakes or any other reptile.	M

Drilling Operations	1. Struck By 2. Noise	1. Stay clear of drill rig while it is being moved into position. Once the rig is positioned over the sample location, and drilling has commenced, stay clear of all moving parts and observe from a safe distance. 2. Hearing protection should be worn at all times when the drill rig is in operation.	**M**
Sampling Process	1. Dermal Contact 2. Splash	1. Wear nitrile gloves while handling sample material and/or sampling preservatives. 2. Safety glasses should be worn at all times to prevent contaminated material or preservatives from coming into contact with the eyes.	**L**

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	
Monitoring Instrument(s):	
Applicable HASP Section(s):	

Additional Safety Considerations

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs ABC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Appropriate work task gloves • First aid kit (located in vehicle). • Fire extinguisher (if in EnSafe field truck).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Drill Rig	a. Drilling to be performed by competent person as certified by employer.	1. Equipment will be inspected daily by sample rig operator. Any safety deficiencies detected will require cessation of drilling activities until appropriate repairs have been made.
2. Hand tools	b. Trained in the proper use of hand tools as required by 29 CFR 1926.	2. Inspect hand tools for damage prior to each shift.
Physical Task Requirements		

Please answer for the task being analyzed:

Yes	No	
X		Ability to climb ladders.
	X	Ability to climb industrial stairs.
	X	Ability to climb ladder wells.
	X	Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
	X	Ability to operate from heights.
	X	Ability to wear Personal Fall Arrest System (PFAS).
	X	Ability to wear tight-fitting face pieces (negative pressure respirators).
X		Ability to lift over 40 pounds.
X		Operation of powered mechanical equipment (List equipment and training requirements in the section above).

Job Hazard Analysis (JHA)

Activity/Work Task: **Groundwater Sampling**	Overall Risk Assessment Code (RAC) (Use highest code)	**L**
Project Location: **9509 Macon Road, Cordova, TN 38016**	**Risk Assessment Code (RAC) Matrix**	
Project Number: **0888827727**	**Severity** / **Probability**	
Date Prepared: 12/9/2020		
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S		
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S		
Notes: (Field Notes, Review Comments, etc.) .		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Recommended PPE:

_X_ Safety Glasses With Sideshields _X_ Safety-Toed Boots _X_ Hard Hat _X_ Nitrile Gloves _X_ High Visibility Vest

Job Steps	Hazards	Controls	RAC
Mobilization / Site Set Up	1. Slips, Trips, Falls	1. Clear trash, trees, roots, weeds, limbs and other ground hazards from the sampling location. Practice good housekeeping to keep the surface around the sampling site clear of obstructions, equipment and other tripping hazards. Wear slip resistant footwear. Use caution when working on uneven and wet ground surfaces.	L
Sampling Process	1. Jagged edges 2. Dermal Contact 3. Vapors 4. Ergonomics	1. Remove jagged material if possible. Wear leather gloves when working around jagged edges. 2. Wear appropriate protective clothing to avoid dermal or personal clothing contact with sampled material. 3. Stand upwind during sampling. Use respiratory protection if exposure is above the PEL for the contaminant. 4. Use proper ergonomic techniques when inserting or removing sampling devices from the wells to prevent injuries to the arms, shoulders or back. Maintain good posture and avoid overexertion.	L

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	
Monitoring Instrument(s):	
Applicable HASP Section(s):	

Additional Safety Considerations

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs ABC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Appropriate work task gloves • First aid kit (located in vehicle). • Fire extinguisher (if in EnSafe field truck).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Various sampling media technology	a. Sampler should be familiar with the required protocol as outlined in various regulatory and industry guidelines.	1. Cross contamination should be avoided by practicing proper decontamination between sample sites. Chain of custody should be complete and correct.

2. Hand tools	b. Trained in the proper use of hand tools as required by 29 CFR 1926.	2. Inspect hand tools for damage prior to use.

Physical Task Requirements

Please answer for the task being analyzed:

Yes	No	
	X	Ability to climb ladders.
	X	Ability to climb industrial stairs.
	X	Ability to climb ladder wells.
	X	Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
	X	Ability to operate from heights.
	X	Ability to wear Personal Fall Arrest System (PFAS).
	X	Ability to wear tight-fitting face pieces (negative pressure respirators).
X		Ability to lift over 40 pounds.
	X	Operation of powered mechanical equipment (List equipment and training requirements in the section above).

Job Hazard Analysis (JHA)

Activity/Work Task: **Hand Auger**	Overall Risk Assessment Code (RAC) (Use highest code)					**L**
Project Location: **9509 Macon Road, Cordova, TN 38016**	**Risk Assessment Code (RAC) Matrix**					
Project Number: **0888827727**	**Severity**	**Probability**				
Date Prepared: 12/9/2020		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S	Catastrophic	**E**	**E**	**H**	**H**	**M**
	Critical	**E**	**H**	**H**	**M**	**L**
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S	Marginal	**H**	**M**	**M**	**L**	**L**
	Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
Assembling the hand auger unit	a. Musculoskeletal injuries b. Pinch point	a. Care should be taken to ensure that the unit is properly handled while trying to assemble. The unit joints can become rusted or jammed. This can cause injury if one person is trying to assemble the sections. b. Be aware that pinch points can be created by joining the handle sections together.	**L**
Performing auger activities	a. Slips/trips/falls. b. Impacts with subsurface anomalies. c. Dermal contact with auger cores.	a. Ensure that your travel path is cleared or prepared prior to performing the survey. Utilize 'eyes on path' to ensure that you have inspected your walking surface both under and ahead of your feet. b. If you encounter resistance when performing the activity, remove the auger and investigate to determine is the obstruction is natural (rock, roots, etc.) or man-made (subsurface utilities). c. Wear proper PPE (gloves) to prevent dermal contact with the auger cores as they are extracted.	**L**
Confirm all boreholes are filled and or capped.	a. Possible injuries due to stepping into the borehole.	a. Visually inspect every borehole.	
Perform personal decontamination	a. Slips, trips, falls. Splashes, chemical contamination, contact with contaminated materials.	a. Perform personal (dry) decontamination procedures. b. Drop off tools and perform equipment decontamination procedures.	

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	**See HASP**
Monitoring Instrument(s):	**Initiate air quality monitoring as outlined in the HASP, if required.**
Applicable HASP Section(s):	

Additional Safety Considerations

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs ABC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Appropriate work task gloves • First aid kit (located in vehicle). • Fire extinguisher (if in EnSafe field truck).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Hand auger	1. Only trained, authorized, and competent people will operate the unit.	1. Equipment will be inspected daily by equipment operator.

Physical Task Requirements

Please answer for the task being analyzed:

Yes	No	
	X	Ability to climb ladders.
	X	Ability to climb industrial stairs.
	X	Ability to climb ladder wells.
	X	Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
	X	Ability to operate from heights.
	X	Ability to wear Personal Fall Arrest System (PFAS).
	X	Ability to wear tight-fitting face pieces (negative pressure respirators).
X		Ability to lift over 40 pounds.
	X	Operation of powered mechanical equipment (List equipment and training requirements in the section above).

Job Hazard Analysis (JHA)

Activity/Work Task: **IDW Management**	Overall Risk Assessment Code (RAC) (Use highest code) **L**
Project Location: **9509 Macon Road, Cordova, TN 38016**	
Project Number: **0888827727**	
Date Prepared: 12/9/2020	
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S	
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S	
Notes: (Field Notes, Review Comments, etc.)	

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of JHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Recommended PPE:
__X__ Safety Glasses __X__ Safety-Toed Boots __X__ Nitrile Gloves ___ Leather Gloves __X__ High Visibility Vest

Job Steps	Hazards	Controls	RAC
Mobilization / Site Set Up	1. Slips, Trips, Falls	1. Practice good housekeeping to keep the walking/working area clear of obstructions, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.	L
1. Cone off area 2. Clear work area of obstacles (trash, plant growth). 3. Water from purging and sampling will be contained in five gallon containers or placed in drums in truck. 4. Transport water to the treatment System 5. Inspect pump, cord, and Ground Fault Circuit Interrupter 6. Place pump in drum or bucket 7. Place hose in treatment tank	1. Traffic 2. Heat Stress 3. Cold Stress 4. Chemical Exposure	1. Use PPE 2. Communicate with equipment operators about equipment movements 3. Monitor water and electrolyte replacement; wear light clothing and loose-fitting clothing. 4. Monitor temperature and wind chill changes and follow Cold Stress Procedures.	L

8. Plug pump in and pump water into system.			

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	**Dust**
Monitoring Instrument(s):	
Applicable HASP Section(s):	**Air monitoring**

Additional Safety Considerations

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs ABC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Half Face respirator as needed. • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Appropriate work task gloves • First aid kit (located in vehicle). • Fire extinguisher (if in EnSafe field truck).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Hand tools	a. Trained in the proper use of hand tools as required by 29 CFR 1926.	1. Inspect hand tools for damage prior to each shift.

Physical Task Requirements

Please answer for the task being analyzed:

Yes	No	
	X	Ability to climb ladders.
	X	Ability to climb industrial stairs.
	X	Ability to climb ladder wells.
	X	Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
	X	Ability to operate from heights.
	X	Ability to wear Personal Fall Arrest System (PFAS).
	X	Ability to wear tight-fitting face pieces (negative pressure respirators).
X		Ability to lift over 40 pounds.
	X	Operation of powered mechanical equipment (List equipment and training requirements in the section above).

Job Hazard Analysis (JHA)

Activity/Work Task: **MOBILIZATION / DEMOBILIZATION**	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: **9509 Macon Road, Cordova, TN 38016**	**Risk Assessment Code (RAC) Matrix**	
Project Number: **0888827727**	**Severity** / **Probability**	
Date Prepared: 12/9/2020		
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S		
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S		
Notes: (Field Notes, Review Comments, etc.) Seat Belts are to be worn at all times while traveling in vehicles.		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on JHA. Annotate the overall highest RAC at the top of JHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
General Physical Hazards	• Slip/Trip/Fall • Cold/Heat Stress • Biological Hazards • Cuts/Scrapes/Bruises • Manual lifting	• Level D PPE required. • Maintain a clean and organized work area. • Watch your step and ensure proper footing. • Provide drinking water and first aid kit. • Wear appropriate clothing for weather conditions. • Assess work area for poisonous plants and animals and communicate observations to avoid them. • Wear appropriate work gloves for task • Maintain 3 points of contact when climbing into vehicle • Use proper lifting techniques by bending and lifting with legs and not back, and do not over extend or twist (Do not lift over 40lb. without assistance)	L
	• Adverse Weather	• Be aware of changing weather condition and provide appropriate weather gear. • When work is halted due to inclement weather, personnel are to seek shelter in vehicles or building designated Shelter in Place (SIP)	L
Driving	• Communication • Accident Prevention	• Do not use cellular phones while operating vehicles of any kind. • Always wear seatbelt when traveling in the vehicle to and from the site	M

Job Steps	Hazards	Controls	RAC
		• Do not allow the operator of a vehicle to be distracted by equipment, personnel or conversations.	**M**

Additional Safety Considerations
1. Ensure all personnel have read the HASP 2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs BC). 3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path. 4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs. 5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle. 6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible. 7. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting. 8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
1. Driving hazards present an elevated risk to our personnel. Do not allow yourself or your coworkers who are operating vehicles to become distracted while driving. Practice defensive driving techniques when operating motor vehicles. 2. Secure all gear in both the cab and bed of trucks to prevent movement during transport or during emergency breaking situations.	LEVEL D • ANSI approved hard hat (if necessary) • ANSI approved safety glasses (if necessary) • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles, equipment or roadways • Leather work gloves (if necessary) • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Work vehicle	1. Company authorized vehicle operator	1. Daily vehicle inspection (visual)

Physical Task Requirements

Please answer for the task being analyzed:

Yes	No	
		Ability to climb ladders.
		Ability to climb industrial stairs.
		Ability to climb ladder wells.
		Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
		Ability to operate from heights.
		Ability to wear Personal Fall Arrest System (PFAS).
		Ability to wear tight-fitting face pieces (negative pressure respirators).
		Ability to lift over 40 pounds.
X		Operation of powered mechanical equipment (List equipment and training requirements in the section above).

Job Hazard Analysis (JHA)

Activity/Work Task: **Monitoring Well Installation Activities**	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location: **9509 Macon Road, Cordova, TN 38016**	**Risk Assessment Code (RAC) Matrix**	
Project Number: **0888827727**	**Severity** / **Probability**	
Date Prepared: 12/9/2020		
Prepared by (Name/Title): Scott Campbell/EnSafe Corp H&S		
Reviewed by (Name/Title): Scott Campbell/EnSafe Corp H&S		

Severity	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)
EnSafe will be acting as oversight only. A qualified drilling subcontractor will be responsible for all drilling activities.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Recommended PPE:
_X_ Safety Glasses With Sideshields _X_ Safety-Toed Boots _X_ Hard Hat ___ Nitrile Gloves _X_ Leather Gloves _X_ Hearing Protection _X_ High Visibility Vest

Job Steps	Hazards	Controls	RAC
Mobilization / Site Set Up	1. Struck By 2. Tip Over 3. Backing 4. Electrocution / Explosion 5. Slips, Trips, Falls	1. All equipment, augers, rods and tools will be properly secured during transport. All vehicles and equipment will comply with DOT requirements. 2. Never move the drilling rig with the mast upright. Set hydraulic leveling jacks before raising the mast. Ensure the drilling site foundation is stable and as level as possible. 3. Use a ground guide along with a functioning back-up alarm during equipment backing. 4. Inspect for buried and overhead utilities in the vicinity of the drilling location. A drilling clearance permit shall be obtained from the client or utility companies prior to initiating intrusive operations. 5. Clear ground hazards from the drilling location. Practice good housekeeping to keep the ground around the drilling site clear of obstructions, equipment and other tripping hazards. Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces.	**M**

Job Steps	Hazards	Controls	RAC
Drill Rod / Auger / Tool Handling	1. Struck By 2. Back Strain	1. Drill rods and augers stored and transported in racks shall be blocked to prevent shifting. Unload drill rods and augers layer by layer. Be prepared for sudden shifting when tailing rod sections. Keep a wide base and secure footing. 2. Use proper lifting techniques when manually handling rods, augers and tools. Use mechanical equipment during lifting whenever possible. Use the buddy system when lifting tools and supplies.	**M**
Hoisting Operations	1. Struck By	1. Never engage the rotary clutch until all personnel and equipment are clear. Never leave the brake unattended when engaged. Drill rods and auger sections should not be picked up or dropped suddenly. Do not lift more than 10 feet of augers or one joint of pipe between tool breaks. Test the brakes daily. Use caution when drilling in wet or damp conditions. Suspend drilling activities if moisture comprises the performance of the braking mechanism.	**M**
Catline Operations	1. Struck By	1. Do not use more wraps than necessary to lift the load. More than one layer of wraps on the cathead is not allowed. Personnel should not stand near, step over or go under the cathead rope under tension. The cathead must be kept clear of obstructions and entanglements. Never leave the cathead unattended when engaged. Do not stand under the object being lifted with the cathead.	**M**
Derrick Operations	1. Fall 2. Weather	1. The mast should be lowered, if possible, to make repairs or to free up entangled wire rope or obstructions. If the mast must be ascended while upright, a proper ladder safety climbing device or safety block system must be used in conjunction with a full body harness. 2. The drill rig operator must be aware of weather conditions and terminate operations in the event of unsafe conditions.	**M**
Auger Operations	1. Struck By	1. Use a long handled flat head shovel when removing auger cuttings. Stay away from the augers when rotating. Prevent shovel from lodging into the augers and kicking out. Do not wear loose clothing when working with augers.	**L**

Job Steps	Hazards	Controls	RAC
Maintenance	1. Equipment 2. Fire	1. The drilling rig and associated equipment must be maintained in a proper functioning condition. All motors must be shut off and electrical, mechanical and hydraulic components locked out of service when making repairs. All equipment must be inspected daily prior to use. Equipment must be operated and maintained in accordance with manufacturer guidelines. Safety shutoff system must be tested daily and not disabled. Bleed off pressure on hydraulic lines before undoing fittings. Do not leave tools or parts loose on the rig after maintenance has been performed. 2. All motors must be shut off during refueling. Smoking in the vicinity of the drilling rig is not permitted. An A-B-C fire extinguisher must be maintained on the drilling rig and associated motorized equipment. Fuel containers will not be stored within 10' of the drilling rig motor. Fuel will be stored in UL approved safety containers with contents clearly labeled.	**L**
Hazardous Drilling Locations	1. Explosion	1. Special procedures will be implemented when drilling in known natural gas locations, such as special mud procedures and blow out preventers.	**M**

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	
Monitoring Instrument(s):	
Applicable HASP Section(s):	
Additional Safety Considerations	

1. Ensure all personnel have read the HASP
2. Ensure all equipment is equipped with necessary fire extinguishers (min 5 lbs ABC).
3. Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path.
4. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Consult appropriate JHAs or SOPs.
5. Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed of the truck. It can cause property damage or serious injuries by falling from vehicle.
6. When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
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8. Wear nitrile gloves when collecting samples in soil to avoid dermal contact with potential contaminants. Be observant for tripping hazards, holes, stickups, vines, old fence wire, etc.

Additional Operational Safety Procedures	PPE
	LEVEL D • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ASTM approved safety-toe boots or approved equivalent. • High visibility reflective traffic vest if near moving vehicles • Appropriate work task gloves • First aid kit (located in vehicle). • Fire extinguisher (if in EnSafe field truck).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
1. Various Drill Apparatus	a. Monitoring Well Installation to be performed by competent person as certified by employer.	1. Equipment will be inspected daily by equipment operator. Any safety deficiencies detected will require cessation of installation activities until appropriate repairs have been made.

Physical Task Requirements

Please answer for the task being analyzed:

Yes	No	
	X	Ability to climb ladders.
	X	Ability to climb industrial stairs.
	X	Ability to climb ladder wells.
	X	Ability to fit into limited entry access points (Confined Spaces) such as manways, ports, and vaults.
	X	Ability to operate from heights.
	X	Ability to wear Personal Fall Arrest System (PFAS).
	X	Ability to wear tight-fitting face pieces (negative pressure respirators).
X		Ability to lift over 40 pounds.
	X	Operation of powered mechanical equipment (List equipment and training requirements in the section above).